This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.045 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS, updating boilerplate, removing a 0.035 MGD flow tier and adding a 0.045 design flow tier. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260-00 et seq.

1. Facility Name and Mailing Address: Presidential Lakes, Section 14
Presidential Service Company, Tier II, Inc.
103 Pegram Lane
Fredericksburg, VA 22408

SIC Code : 4952 WWTP

Facility Location: Carter Drive
King George, VA

County: King George

Facility Contact Name: Jules L. Elliott, Vice President

Telephone Number: 540-891-6673

2. Permit No.: VA0086720

Expiration Date of previous permit: July 25, 2007 (administratively continued)

Other VPDES Permits associated with this facility: VAN020109

Other Permits associated with this facility: N/A

E2/E3/E4 Status: N/A

3. Owner Name: Presidential Service Company, Tier II, Inc.

Owner Contact/Title: Jules L. Elliott, Vice President

Telephone Number: 540-891-6673

4. Application Complete Date: July 25, 2007

Permit Drafted By: Joan C. Crowther

Date Drafted: July 12, 2010

Draft Permit Reviewed By: Alison Thompson

Date Reviewed: July 14,2010

Public Comment Period : Start Date: August 18, 2010

End Date: September 17, 2010

5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination dated January 24, 1997.

Receiving Stream Name :	Popcastle Creek		
Drainage Area at Outfall:	0.3 sq.mi.	River Mile:	2.69
Stream Basin:	Rappahannock River	Subbasin:	None
Section:	4	Stream Class:	III
Special Standards:	None	Waterbody ID:	VAN-E21R
7Q10 Low Flow:	0.0 MGD	7Q10 High Flow:	0.0 MGD
1Q10 Low Flow:	0.0 MGD	1Q10 High Flow:	0.0 MGD
Harmonic Mean Flow:	0.0 MGD	30Q5 Flow:	0.0 MGD
303(d) Listed:	No	30Q10 Flow:	0.0 MGD
TMDL Approved:	No	Date TMDL Approved:	N/A

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

- ✓ State Water Control Law
- ✓ Clean Water Act
- ✓ VPDES Permit Regulation
- ✓ EPA NPDES Regulation
- ✓ EPA Guidelines
- ✓ Water Quality Standards
- ___ Other

7. Licensed Operator Requirements: Class III

7. Licensed Operator Requirements: Class III

8. Reliability Class: Class I

9. Permit Characterization:

✓ Private	___ Effluent Limited	___ Possible Interstate Effect
___ Federal	✓ Water Quality Limited	___ Compliance Schedule Required
___ State	___ Toxics Monitoring Program Required	___ Interim Limits in Permit
✓ POTW	___ Pretreatment Program Required	___ Interim Limits in Other Document
✓ TMDL		

10. **Wastewater Sources and Treatment Description:**

This 0.035 MGD design flow wastewater treatment plant was issued a Certificate to Operate on May 29, 1996. The wastewater treatment facility consists of a barscreen, an aerated equalization basin, complete mixed activated sludge basin operating in an extended aeration/nitrification mode, secondary clarification, two multi-media filters (anthracite coal and sand beds), chlorination, dechlorination, and post aeration. The final effluent is pumped to the headwaters of Popcastle Creek, just below the dam of Presidential Lakes. The Outfall Number 001 location has been designated after the post aeration tank prior to being pumped to the receiving stream.

For a number of months during the past several years, the facility's flow has either been at or over the facility's 95% design flow. During the March 9, 2010 meeting with Jules Elliott (Vice-President) and Mike Bagby (Consulting Engineer), staff learned that the actual design flow of the installed wastewater treatment plant was 0.045 MGD. In order to address and eliminate the permit's 95 % design flow special condition exceedances, staff decided to allow the wastewater treatment plant to be re-rated at the actual installed capacity. The Certificate to Operate the 0.045 MGD design facility will be issued concurrent with the reissuance of this VPDES permit.

See Attachment 2 for a facility schematic/diagram.

TABLE 1 – Outfall Description

Outfall Number	Discharge Sources	Treatment	Design Flow	Outfall Latitude and Longitude
001	Domestic Wastewater	See Item 10 above.	0.045 MGD and 0.07 MGD	38° 17' 26" N 77° 14' 47" W

See Attachment 3 for USGS Topographic Map: King George (DEQ #181C).

11. **Sludge Treatment and Disposal Methods:**

Sludge is stored in a sludge storage tank that is equipped with decanting device and aeration. The sludge is then disposed of at the Massaponax Wastewater Treatment Plant (VA0025658) in Spotsylvania County, Virginia.

12. Discharges and Monitoring Station in Vicinity of Discharge

TABLE 2	
Identification Number	Description DEQ Ambient Water Quality Monitoring in the Vicinity of the Presidential Lakes, Section 14's Discharge
3-LAM000.57	Lambs Creek - DEQ Ambient Water Quality Monitoring at Route 3 Bridge (38° 15' 34.2" / 77° 15' 37.3") Watershed station is approximately 2.67 rivermiles downstream of Presidential Lakes, Section 14's discharge point; Samples collected from September 2005 through December 2007.

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Hypochlorite	100 lbs.	Stored in garage on-site
Bisulfite	100 lbs.	Stored in garage on-site
Soda Ash	100 lbs.	Stored in garage on-site

14. Site Inspection: Performed by Terry Nelson, Water Compliance Inspector on September 28, 2006. (see Attachment 4).

15. Receiving Stream Water Quality and Water Quality Standards:

a) Ambient Water Quality Data

There is no DEQ ambient water quality monitoring station located on the facility's receiving stream, Popcastle Creek; therefore, no water quality assessment is provided.

However, the nearest downstream DEQ monitoring station with ambient data is Station 3-LAM000.57, located on Lambs Creek at the Route 3 bridge crossing, approximately 2.67 rivermiles downstream from the Presidential Lakes, Section 14's discharge point.

This watershed ambient water monitoring station, 3-LAM000.57, is located on Assessment Unit VAN-E21R_LAM01A08, which extends from the confluence with Popcastle Creek downstream until tidal waters, near the confluence with the Rappahannock River. This station is located within Section 4 of the Rappahannock River Basin, and classified as Class III water. The following is a monitoring summary for VAN-E21R_LAM01A08 as taken from the 2008 Integrated Assessment:

> *E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. The aquatic life and wildlife uses are considered fully supporting. The fish consumption use was not assessed.*

Please see the DEQ Planning Statement for more information, Attachment 5.

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the 2008 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment.

In response, the Virginia General Assembly amended the State Water Control Law in 2005 to include the *Chesapeake Bay Watershed Nutrient Credit Exchange Program*. This statute set forth total nitrogen and

total phosphorus discharge restrictions within the bay watershed. Concurrently, the State Water Control Board adopted new water quality criteria for the Chesapeake Bay and its tidal tributaries. These actions necessitate the evaluation and the inclusion of nitrogen and phosphorus limits on discharges within the bay watershed.

§62.1-44.19:12:12-19 of the Code of Virginia (as July 1, 2005) established treatment technology and offset requirements for new and expanded facilities in the Chesapeake Bay watershed and 9 VAC 25-820, *General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia* reflects key changes made to the requirements of 9 VAC 25-40 (Policy for Nutrient Enriched Waters) and 9 VAC 25-720 (Water Quality Management Plan).

b) Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream Popcastle Creek is located within Section 4 of the Rappahannock River Basin, and classified as Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

Freshwater – Water Quality Criteria/Wasteload Allocation Analysis (Attachment 6) details other water quality criteria applicable to the receiving stream.

Ammonia:

Ambient water quality data for the receiving stream are not available. Since the 7Q10 and 1Q10 flows of the receiving stream are 0.0 MGD, the effluent pH and temperature data may be used to establish the ammonia water quality standard. Staff has re-evaluated the effluent data for pH and found a significant difference between the previous used pH of 7.5 SU (used for the Ammonia as N calculations in the 1997 permit reissuance process) and the current pH of 8.0 SU. Therefore, the 8.0 SU pH value will be used for this reissuance. See Attachment 7 for the derivation of the 90th percentile values of the effluent pH data from December 2004 to April 2010. There is no temperature effluent data available so a default temperature value of 25°C will be used for this reissuance.

Metals Criteria:

The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/L calcium carbonate). There is no hardness data for this facility. The 7Q10 flow of the receiving stream is zero and no ambient data is available. Staff guidance suggests using a default hardness value of 50 mg/L $CaCO_3$ for streams east of the Blue Ridge. The hardness-dependent metals criteria in Freshwater – Water Quality Criteria/Wasteload Allocation Analysis (Attachment 6) are based on this default value.

Bacteria Criteria:

The Virginia Water Quality Standards (9VAC25-260-170 A.) states that the following criteria shall apply to protect primary recreational uses in surface waters:

1) *E. coli* bacteria per 100 ml of water shall not exceed a monthly geometric mean of 126 N/100 mls for a minimum of four weekly samples taken during any calendar month.

c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of

the Commonwealth of Virginia. The receiving stream, Popcastle Creek, is located within Section 4 of the Rappahannock River Basin. This section has not been designated with any special standards.

d) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on June 28, 2010, for records to determine if there are threatened or endangered species in the vicinity of the discharge. No threatened or endangered species were identified. See Attachment 8 for the Virginia DGIF's database search results.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on the 7Q10 flow of zero and at times the stream will only be comprised of effluent. The limits were derived to meet water quality standards. Permit limits proposed have been established by determining wasteload allocations which will result in attaining/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development :

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:

Effluent data obtained from permit application and DMRs have been reviewed and determined to be suitable for evaluation. Effluent data December 2004 through April 2010 were reviewed; and, the following exceedances were noted: Ammonia as N for February 2007, May 2009, December 2009 and March 2010; Dissolved Oxygen for September 2006; and TRC-contact tank for September 2006.

The following pollutants require a wasteload allocation analysis: Ammonia as N and Total Residual Chlorine.

b) Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o[Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

Where:
- WLA = Wasteload allocation
- C_o = In-stream water quality criteria
- Q_e = Design flow
- Q_s = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for chronic ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- C_s = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o.

Staff derived wasteload allocations where parameters are reasonably expected to be present in an effluent (e.g., total residual chlorine where chlorine is used as a means of disinfection) and where effluent data indicate the pollutant is present in the discharge above quantifiable levels. With regard to the Outfall 001 discharge, ammonia as N is likely present since this is a WWTP treating sewage, total residual chlorine may be present since chlorine is used for disinfection.

c) Effluent Limitations Toxic Pollutants, Outfall 001

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9 VAC 25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N:

Staff reevaluated the effluent pH data has concluded it is significantly different than what was used previously to derive ammonia criteria. The new 90th percentile pH value was 8.0 SU. The default temperature value of 25°C was used. The staff used the new data to determine new ammonia water quality criteria, new wasteload allocations (WLAs) and new ammonia limits (Attachment 9). (Note: DEQ guidance suggests using a sole data point of 9.0 mg/L for discharges containing domestic sewage to ensure the evaluation adequately addresses the potential for ammonia to be present in the discharge containing domestic sewage.)

The new Ammonia as N effluent limitations were determined to be 1.8 mg/L monthly average and 2.6 mg/L weekly average maximum. The 1997 permit reissuance Ammonia as N effluent limitations were 2.1 mg/L monthly average and 3.2 mg/L weekly average and were carried forward in the 2002 permit reissuance. The new Ammonia as N effluent limitations will be used in this permit reissuance since they are more stringent and are needed to maintain water quality standards in the receiving stream. The 1997 permit reissuance documentation used to determine the previous Ammonia as N effluent limitations can be found in Attachment 10.

The Ammonia as N effluent limitations discussed above are determined to protect against water quality toxicity. However, the Ammonia as N effluent limitations were also included in the previous permit reissuance to control the Dissolved Oxygen sag in the receiving stream by limiting the TKN parameter. The October 17, 1996 stream model was run using a TKN value of 4.2 mg/L. The TKN effluent limitation of 4.2 mg/L was based on the assumption that TKN is equal to 2 times the Ammonia as N effluent limitation. Therefore, Ammonia as N effluent limitation of 2.1 mg/L is equal to a TKN value

of 4.2 mg/L. The more stringent Ammonia as N effluent limitations of 1.8 mg/L monthly average and 2.6 mg/L weekly average maximum will also protect the Dissolved Oxygen sag in the receiving stream.

2) Total Residual Chlorine:

Chlorine is used for disinfection and is potentially in the discharge. Staff calculated WLAs for TRC using current critical flows. In accordance with current DEQ guidance, staff used a default data point of 0.2 mg/L and the calculated WLAs to derive limits. A monthly average of 0.007 mg/L and a weekly average limit of 0.008 mg/L are proposed for this discharge (see Attachment 11).

3) Metals/Organics:

No metals or organics data were available for review; therefore, no effluent limits are needed.

d) Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to dissolved oxygen (D.O.), biochemical oxygen demand-5 day (BOD_5), total suspended solids (TSS), and pH limitations are proposed.

Dissolved Oxygen and BOD_5 effluent limitations are based on the stream modeling conducted on October 17, 1996 (Attachment 12) and are set to meet the D.O. water quality criteria in the receiving stream. The stream model ensures that with a 6.0 mg/L effluent dissolved oxygen limitation, the dissolved oxygen sag in the receiving stream does not go below 5.0 mg/L for design flows of 0.035 and 0.07 MGD. This reissuance is removing the 0.035 MGD design flow tier and replacing it with 0.045 MGD design flow. Staff determined that the same effluent limitations would maintain water quality standards in the receiving stream at this increase tier of 0.045 MGD design flow since the October 17, 1996 stream model demonstrates that the same effluent limitations would maintain water quality standards at a 0.07 MGD design flow tier.

It is staff's practice to equate the Total Suspended Solids limits with the BOD_5 limits. TSS limits are established to equal BOD_5 limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

E. coli bacteria limitations are in accordance with the Water Quality Standards 9VAC25-260-170.

e) Effluent Annual Average Limitations and Monitoring, Outfall 001 for the design flow of 0.07 MGD – Nutrients

VPDES Regulation 9VAC25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries. There are three regulations that necessitate the inclusion of nutrient limitations:

- 9VAC25-40 - *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* requires new or expanding discharges with design flows of ≥0.04 MGD to treat for TN and TP to either BNR levels (TN = 8 mg/L; TP = 1.0 mg/L) or SOA levels (TN = 3.0 mg/L and TP = 0.3 mg/L).

- 9VAC25-720 – *Water Quality Management Plan Regulation* sets forth TN and TP maximum wasteload allocations for facilities designated as significant discharges, i.e., those with design flows of ≥0.5 mgd above the fall line and ≥0.1 MGD below the fall line. This regulation limits the total nitrogen and total phosphorus mass loadings from these discharges.

- 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia* became effective January 1, 2007. This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements, shall be authorized, monitored, limited, and otherwise regulated under the general permit and not this individual permit. This facility has coverage under this General Permit; the permit number is VAN20109.

In order to address and resolve the reoccurring exceedances of the VPDES Permit's 95% capacity special condition, staff agreed to re-rate the design flow capacity from 0.035 MGD to 0.045 MGD which is the actual design capacity of the installed wastewater treatment plant. Since no additional upgrade or expansion was required to re-rate the wastewater treatment plant, the inclusion of Total Phosphorus and Nutrient effluent limitations are not required at this re-rate design flow.

Once the Certificate to Operate the 0.07 MGD design flow facility has been issued, monitoring for Nitrates + Nitrites, Total Kjeldahl Nitrogen, Total Nitrogen, and Total Phosphorus is required to protect the Water Quality Standards of the Chesapeake Bay. Monitoring frequencies are set at the frequencies set forth in 9VAC25-820.

Also, the annual average effluent limitations, as well as monthly and year to date calculations, for Total Nitrogen and Total Phosphorus are included in this permit at the design flow of 0.07 MGD.

For the 0.07 MGD flow, concentration limits of 9.4 mg/L TN annual average and 1.2 mg/L TP annual average are needed based on 9VAC40-70.A(4). Loading limits will be governed by the general permit mentioned above.

The TN and TP effluent concentrations above were derived as follows:

TN concentration of 18.7 mg/L (level of technology installed – Secondary) was used to determine the existing TN poundage.

Total N (in pounds/yr) = concentration (mg/L) x design flow (MGD) x 8.3438 x 365 (days/yr)
Total N (lbs/yr) = 18.7 mg/L x 0.035 MGD x 8.3438 x 365 days/yr
Total N lbs/yr = 1993
Therefore:
1993 lbs/yr = TN mg/L x 0.07 MGD x 8.3438 x 365 days/yr
TN mg/L = 9.4

TP concentration of 2.5 mg/L (level of technology installed – Secondary) was used to determine the existing TP poundage.

Total P (lbs/yr) = 2.5 mg/L x 0.035 MGD x 8.3438 x 365 days/yr
Total P lbs/yr = 266
Therefore:
266 lbs/yr = TP mg/L x 0.07 MGD x 8.3438 x 365 days/yr
TP mg/L = 1.2

9 VAC 25-40-30 D exempts facilities located in the Chesapeake Bay watershed from Total Phosphorus loading limiting that are based on the receiving stream's previously being classified as Nutrient Enriched Waters, on the basis that more stringent annual loading limits (i.e. from the Watershed General Permit) apply to such facilities.

f) Effluent Limitations and Monitoring Summary.

The effluent limitations are presented in the following table. Limits were established for Flow, BOD_5, Total

Suspended Solids, Ammonia, pH, Dissolved Oxygen, Total Residual Chlorine, and *E.coli* bacteria.

The limit for Total Suspended Solids is based on Best Professional Judgment.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 3.785.

For the 0.045 MGD design flow, the Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual. For the 0.07 MGD design flow, the Sample Type and Frequency are in accordance for the *General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia* guidance.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD_5 and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and result in greater than 85% removal.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19. Effluent Limitations/Monitoring Requirements:

a. **Design flow is 0.045 MGD.**

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date or the issuance of the CTO for the 0.07 MGD facility, whichever occurs first, the permittee is authorized to discharge from Outfall Number 001. Such discharges shall be limited and monitored by the permittee as specified below. Effluent samples are authorized for collection after the post aeration tank prior to be pumped to the receiving stream.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
BOD_5	3,5	14 mg/L 2.4 kg/day	21 mg/L 3.6 kg/day	NA	NA	1/W	4-HC
Total Suspended Solids (TSS)	2	14 mg/L 2.4 kg/day	21 mg/L 3.6 kg/day	NA	NA	1/W	4-HC
DO	3,5	NA	NA	6.0 mg/L	NA	1/D	Grab
Ammonia, as N	3,5	1.8 mg/L	2.6 mg/L	NA	NA	1/W	4-HC
E. coli (Geometric Mean)	3	126 n/100mls	NA	NA	NA	1/W	Grab
Total Residual Chlorine (after contact tank)	2, 3, 4	NA	NA	1.0 mg/L	NA	3/D at 4-hr Intervals	Grab
Total Residual Chlorine (after dechlorination)	3	0.007 mg/L	0.008 mg/L	NA	NA	1/D	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Stream Model dated October 17, 1996- Attachment 12.

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.
1/W = Once every week.
3/D = Three times per day.

4-HC = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 4-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of four (4) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum four (4) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ≥10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

b. **Design flow is 0.07 MGD.**
Effective Dates: During the period beginning with the issuance of the Certificate to Operate for the 0.07 MGD wastewater treatment facility and lasting until the permit's expiration date, the permittee is authorized to discharge from Outfall Number 001. Such discharges shall be limited and monitored by the permittee as specified below. Effluent samples are authorized for collection after the post aeration tank prior to be pumped to the receiving stream.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
BOD_5	3,5	14 mg/L 3.7 kg/day	21 mg/L 5.6 kg/day	NA	NA	1/W	8-HC
Total Suspended Solids (TSS)	2	14 mg/L 3.7 kg/day	21 mg/L 5.6 kg/day	NA	NA	1/W	8-HC
DO	3,5	NA	NA	6.0 mg/L	NA	1/D	Grab
Total Kjeldahl Nitrogen (TKN)	3,6	NL mg/L	NA	NA	NA	1/2W	8-HC
Ammonia, as N	3,5	1.8 mg/L	2.6 mg/L	NA	NA	1/W	8-HC
E. coli (Geometric Mean)	3	126 n/100mls	NA	NA	NA	1/W	Grab
Total Residual Chlorine (after contact tank)	2, 3, 4	NA	NA	1.0 mg/L	NA	3/D at 4-hr Intervals	Grab
Total Residual Chlorine (after dechlorination)	3	0.007 mg/L	0.008 mg/L	NA	NA	1/D	Grab
Nitrate+Nitrite, as N	3, 6	NL mg/L	NA	NA	NA	1/2W	8-HC
Total Nitrogen [a]	3, 6	NL mg/L	NA	NA	NA	1/2W	Calculated
Total Nitrogen – Year to Date [b]	3, 6	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen - Calendar Year [b]	3, 6	9.4 mg/L	NA	NA	NA	1/YR	Calculated
Total Phosphorus	3	NL mg/L	NA	NA	NA	1/2W	8-HC
Total Phosphorus – Year to Date [b]	3, 6	NL mg/L	NA	NA	NA	1/M	Calculated
Total Phosphorus - Calendar Year [b]	3, 6	1.2 mg/L	NA	NA	NA	1/YR	Calculated

The basis for the limitations codes are:
1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Stream Model – Dated October 17, 1996 Attachment 12.
6. 9VAC25-40 (Nutrient Regulation)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.
3/D = Three times a day.
1/W = Once every week.
1/M = Once every month.
1/2W = Once every two weeks at least 7 days apart.
1/YR = Once every year.

8-HC = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 8-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of eight (8) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum eight (8) grab samples obtained at hourly or smaller intervals may be collected
Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ≥10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

a. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite.
b. See Section 20.a. for the calculation of the Nutrient Calculations.

20. Other Permit Requirements:

a) Part I.B. of the permit contains additional chlorine monitoring requirements, quantification levels and compliance reporting instructions.

These additional chlorine requirements are necessary per the Sewage Collection and Treatment Regulations at 9VAC25-70 and by the Water Quality Standards at 9VAC25-260-170. A minimum chlorine residual must be

maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more that 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an adequate indicator of compliance with the *E. coli* criteria. *E. coli* limits are defined in this section as well as monitoring requirements to take effect should an alternate means of disinfection be used.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

The calculations for the Nitrogen and Phosphorus parameters shall be in accordance with the calculations set forth in 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia.* §62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9VAC25-820-70. As annual concentrations (as opposed to loads) are limited in the individual permit, these reporting calculations are intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.

21. Other Special Conditions:

a) 95% Capacity Reopener. The VPDES Permit Regulation at 9VAC25-31-200.B.4. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. The facility is a PVOTW.

b) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. Within 90 days of the effective date of this permit, the permittee shall submit for approval an Operations and Maintenance (O&M) Manual or a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Regional Office (DEQ-NRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

c) CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

d) Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 C, and Rules and Regulations for Waterworks and Wastewater Works Operators (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class III operator.

e) Reliability Class. The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of I

f) Sludge Reopener. The VPDES Permit Regulation at 9VAC25-31-220.C. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA.

g) Sludge Use and Disposal. The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2., and 420 through

720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.

h) Nutrient Offsets. The Virginia General Assembly, in their 2005 session, enacted a new Article 4.02 (Chesapeake Bay Watershed Nutrient Credit Exchange Program) to the Code of Virginia to address nutrient loads to the Bay. Section 62.1-44.19:15 sets forth the requirements for new and expanded dischargers, which are captured by the requirements of the law, including the requirement that non-point load reductions acquired for the purpose of offsetting nutrient discharges be enforced through the individual VPDES permit.

i) E3/E4. 9VAC25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

j) Nutrient Reopener. 9VAC25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

k) Treatment Works Closure Plan. The State Water Control Law §62.1-44.15:1.1, makes it illegal for an owner to cease operation and fail to implement a closure plan when failure to implement the plan would result in harm to human health or the environment. This condition is used to notify the owner of the need for a closure plan where a facility is being replaced or is expected to close.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

a) Special Conditions:
1) Removed the "Indirect Discharges" special condition. This wastewater treatment plant serves a residential development treating only domestic sewage.
2) Removed the "Water Quality Criteria Reopener" special condition. No additional water quality monitoring is required by the permit; therefore, any additional water quality parameters that may be added to the permit in the future will be addressed during future permit reissuances.
3) Removed the "Water Quality Criteria Monitoring" special condition. This special condition normally used when wastewater treatment plant's design flow is greater than or equal to 1.0 MGD. Therefore, the inclusion of this special condition is not necessary.
4) Removed the "Additional Outfall 001 Monitoring" special condition. It has been determined that effluent samples collected after post aeration and prior to pumping it to the receiving stream provided representative effluent samples to the receiving stream. Therefore, this special condition is no longer necessary.
5) Included the "Nutrent Offsets" special condition because once the wastewater treatment plant is upgraded and expanded to the 0.07 MGD design flow, the requirements of the 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia* becomes effective for this wastewater treatment plant.
6) Included the "E3/E4" special condition.
7) Included the "Nutrient Reopener" special condition because once the wastewater treatment plant is upgraded and expanded to the 0.07 MGD design flow, the requirements of the 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in*

Virginia becomes effective for this wastewater treatment plant.

8) Included the "TMDL" special condition because downstream receiving streams are listed as impaired on the 208 303(d) Water Quality Assessment Report.

b) Monitoring and Effluent Limitations:

1) Removed all effluent monitoring and limitations for the 0.035 MGD design flow tier.
2) Included the appropriate effluent monitoring and limitations for a 0.045 MGD design flow capacity tier.
3) Ammonia as N effluent limitations for design flow tiers were changed from 2.1 mg/L monthly average and 3.6 mg/L weekly average maximum to 1.8 mg/L monthly average and 2.6 mg/L weekly average maximum.
4) For both design flow tiers, the $cBOD_5$ effluent limitations were replaced with BOD_5 effluent limitations to take into account the measure of nitrogenous BOD demand since TKN does not have effluent limitations.

Variances/Alternate Limits or Conditions:

24. There are no variances or alternate limits or conditions established in the permit reissuance.

25. Public Notice Information:

First Public Notice Date: August 18, 2010 Second Public Notice Date: August 25, 2010

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3925, joan.crowther@deq.virginia.gov. See Attachment 13 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

TMDL Reopener: This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

This facility discharges directly to Popcastle Creek. The stream segment receiving the effluent is not listed in Part I of the 2008 303(d) list. However, the receiving stream discharges into Lambs Creek which in turn flows into the Rappahannock River. Both Lambs Creek and the Rappahannock River are on the 2008 303(d) list. Although none of the following TMDLs specifically include the receiving stream, all these TMDLs will consider upstream point source discharges. The TMDLs are:

a) Lambs Creek – Recreational;
b) Tidal Rappahannock – PCBs in Fish Tissue;
c) Tidal Freshwater Rappahannock River (RPPTF) – Aquatic Life Use; and
d) RPPTF – Recreational.

The only TMDL that has been approved thus far is the RPPTF – Recreational impairment. This TMDL was approved by EPA on May 5, 2008. The bacteria TMDL that was done for the upper portion of the Tidal Freshwater Rappahannock River included a WLA of 1.22E+11 cfu/year of *E.coli* bacteria for the

Presidential Lakes, Section 14 Wastewater Treatment Plant. This WLA was calculated using the maximum permitted design flow of 0.07 MGD. *E.coli* bacteria effluent limitation and monitoring has been included in the permit to address this issue.

The Lambs Creek – Recreational impairment is due by 2020. However, it is anticipated that with the approval of the 2010 Assessment Guidance, a TMDL will not be required for this segment since it is "nested" within a completed TMDL; namely, the Tidal Freshwater Rappahannock River – Recreational. The bacteria sources in this segment were already taken into account during this TMDL.

The RPPTF – Aquatic Life Use impairment TMDL is scheduled for 2010.

The Tidal Rappahannock – TMDL PCBs in Fish Tissue is scheduled for 2016. In support for the PCB TMDL that will be developed for the tidal Rappahannock River by 2016, this facility is a candidate for low-level PCB monitoring, based upon its designation as a minor municipal facility. Low-level PCB analysis uses EPA Method 1668B, which is capable of detecting low-level concentrations for all 209 PCB congeners. The Assessment/TMDL/Permitting Staff has concluded however, that low-level PCB monitoring is not warranted, as this facility serves only a residential development that was constructed in the late 1990's and PCB production was banned by the federal government in 1976.

Please see the DEQ's Planning Statement (Attachment 5) for additional information regarding these TMDLs.

27. Additional Comments:

Previous Board Action(s): There has been no previous Board action.

Staff Comments: The permit reissuance delay is due to the need to obtain the State Corporation Commission Certification for the permittee. Over the past couple of years, staff has been corresponding between the County of King George, the State Corporation Commission and the permittee to obtain this Certification. As of June 2010, the permittee's application to the State Corporation Commission was still deemed incomplete. Staff has notified the permittee of this and was assured by the permittee that they would do everything possible to get their Certification expedited. The VPDES Permit has been administratively continued since its expiration date of July 25, 2007.

Public Comment: No comments were received during the public notice.

EPA Checklist: The checklist can be found in Attachment 14.

Presidential Lakes, Section 14 Wastewater Treatment Plant
Fact Sheet Attachments

Attachment	Description
1	Flow Frequency Memo dated January 24, 1997
2	Facility Diagram
3	USGS Topographic Map – King George (DEQ #181C)
4	Site Inspection Report dated September 28, 2006 by Terry Nelson, DEQ-NRO Water Inspector
5	Planning Statement for Presidential Lakes, Section 14 School, dated July 14, 2010
6	Freshwater Water Quality Criteria/ Wasteload Allocated Analysis dated July 15, 2010
7	Monthly Maximum Effluent pH data from December 2004 to April 2010
8	DGIF Threatened and Endangered Species Database Search dated June 28, 2010
9	2010 Permit Reissuance Ammonia Effluent Calculation dated July 16, 2010
10	1997 Permit Reissuance Ammonia Effluent Calculations
11	2010 Permit Reissuance Total Residual Chlorine Effluent Calculation dated July 1, 2010
12	DO Stream Model dated October 17, 1996
13	Public Notice
14	EPA Checklist dated July 9, 2010

Presidential Lakes, Section 14 Wastewater Treatment Plant
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12	DO Stream Model dated October 17, 1996
13	Public Notice
14	EPA Checklist dated July 9, 2010

To: Matthew B. llinghaus@WDBRG@DEQ
From: James A. Olson@WDBRG@DEQ
Originated by: Paul E. Herman@WQA@DEQ
Cc:
Subject: fwd: Presidential Lakes Section 14 - VA0086720 FYI
Attachment: BEYOND.RTF
Date: 12/3/01 11:53 AM

From: Paul E. Herman@WQA@DEQ, on 12/3/01 11:53 AM:
To: James A. Olson@WDBRG@DEQ

Resending because of email problems NRO had in Nov.

Paul E. Herman, P.E.
Surface Water Investigations
Dept. of Environmental Quality
(804) 698-4464

From: Paul E. Herman@WQA@DEQ, on 11/13/2001 3:01 PM:
To: James A. Olson@WDBRG@DEQ

Jim,

I have reviewed the flow frequency request form you submitted for the Presidential Lakes Section 14 VPDES permit. In a memo to you dated January 24, 1997, I provided flow frequencies for the discharge point and two points downstream. Additonal flow data has not been collected on the receiving stream. Please continue to use the flow frequency data presented in my January 24, 1997, memo concerning this facility.

If you have any questions, please let me know.

Paul E. Herman, P.E.
Surface Water Investigations
Dept. of Environmental Quality
(804) 698-4464

Attachment 1

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY

13901 Crown Court — Northern Virginia Regional Office, Woodbridge, Virginia 22193 — (703) 583-3800

Subject: **FLOW FREQUENCY REQUEST**

To: Paul E. Herman, OWPP-Office of Water Quality Assessment

From: Jim Olson, NVRO - (703) 583-3836 JAO

Date: July 9, 2001

Facility Name: Presidential Lakes Section 14

Permit Number: VPDES Permit No. VA0086720

Permit Type: Minor, Municipal

Permit Action: Reissuance (permit expires 05/19/02)

Flow Frequencies Needed: 7Q10 (low) ✓ 7Q10 (high) ✓ 1Q10 (low) ✓ 1Q10(high) ✓
30Q5 (low) ✓ 30Q5 (high) ✓ Harmonic Mean ✓
Other: N/A

Outfall Description:

#	Latitude	Longitude	Receiving Stream	Drainage Area*	7Q10*
001	38° 17' 26"	77° 14' 44"	Popcastle Creek	0.3 mi^2	0.0 cfs

Current Reference Gauging Stations

Name	Number	Drainage Area*	7Q10*
Piscataway Creek, Md	#01653600	39.5 mi^2	0.0 cfs

Comments:

Enclosures: Excerpt of topo maps- King George (# 181C) & Passapatanzy (# 182D)Quads
* Flow Frequency Determination Memorandum dated January 24,1997

VPDES NO. **VA0086720**

Summary of conditions from last inspection (January 30, 2002)

	Problem identified	**Corrected**	**Not Corrected**
1.	Foam control spray not working	[**X**]	[ ]
2.	Sludge holding tank full of stormwater	[**X**]	[ ]
3.	Final flows are estimated.	[**X**]	[ ]
4.	Properly identify outfall pipe and label which of 3 adjacent pipes is correct	Did not inspect outfall	
5.	Alarm system not properly tested and remote page may not work	[ ]	[**X**]
6.	Stand by generator and power switch not being tested	[ ]	[**X**]
7.	No potable water or alternate wash down water source available	[**X**]	[ ]

Summary of conditions for current inspection

Comments:

- The treatment system appears to be operating properly.
- Dabney & Crooks supplied laboratory bench sheets for June through August. Review of these bench sheets did not show any problems with TSS, BOD, and Ammonia analysis.
- Mr. Quann was not aware of quarterly checks for the chlorine test meter.
- The communitor has been completely uninstalled from the system.
- I observed some portions of the grates covering the treatment system were rusted and the operator warned me about grating sections that were structurally questionable.
- The secondary clarifiers were covered with a scum layer.
- The tablet feeder for chlorine was not working properly due to tablets stuck in the tube.
- The backflow prevention/cross connection device does not appear to have been inspected.
- According to the operator, none of the alarm system horns or warning lights are operational.
- The operator and owner do not know if the back-up generator is operational.
-

Recommendations for action:

1. **Please have Dabney & Crooks provide documents showing the chlorine meter is tested quarterly.**
2. **Please maintain all tank covers so that they are structurally sound and preferably free of corrosion.**
3. **If the scum layer on the clarifiers has not been removed, please have staff assist with the scum removal. If possible, please identify causes for the scum and methods to prevent recurring scum layers.**
4. **Please check that chlorine and dechlorination tablet feeder tubes are clean and properly refilled.**
5. **Please have the backflow prevention/cross connection device checked annually.**
6. **The alarm system for the treatment processes must be in proper working order and have remote notification of failures per 9 VAC 25-790-490-F. This is a repeat problem that must be addressed.**
7. **As a Class I reliability plant, this facility must have a working generator and power transfer switch per 9 VAC 25-790-490-C. This is a repeat problem that must be addressed.**

DEQ
WATER FACILITY INSPECTION REPORT
PREFACE

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date
VA0086720	**07/26/2002**		**07/25/2007**

Facility Name	Address	Telephone Number
Presidential Lakes Section 14 STP	**Carter Drive King George, VA 22485**	**(540) 891-6673**
Owner Name	Address	Telephone Number
Presidential Service Company	**103 Pegram Lane Fredericksburg, VA 22408**	**(540) 891-6673**
Responsible Official	Title	Telephone Number
Jules Elliott	**Vice President**	**(540) 891-6673**
Responsible Operator	Operator Cert. Class/number	Telephone Number
Douglas Crooks	**Class I 1909000367**	**(540) 373-0380**

TYPE OF FACILITY:

DOMESTIC				**INDUSTRIAL**			
Federal		Major		Major		Primary	
Non-federal	**X**	Minor	**X**	Minor		Secondary	

INFLUENT CHARACTERISTICS:	DESIGN:
Flow	**0.070**
Population Served	**560**
Connections Served	**280**
BOD_5	**Unknown**
TSS	**Unknown**

EFFLUENT LIMITS: Units in mg/L unless otherwise specified.

Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)		**NL**	**NL**	**TSS**		**14.0**	**21.0**
pH (S.U.)	**6.0**		**9.0**	**$CBOD_5$**		**14.0**	**21.0**
DO	**6.0**			**Total Contact Cl**	**1.0**		
NH3 as N		**2.1**	**3.2**	**Inst Res Max Cl**		**0.008**	**0.010**

Receiving Stream	**UT to Popcastle Creek**
Basin	**Rappahannock River**
Discharge Point (LAT)	**38° 17' 26" N**
Discharge Point (LONG)	**77° 14' 47" W**

VPDES NO. **VA0086720**

REV 5/00

DEQ
WATER FACILITY
INSPECTION REPORT
PART 1

Inspection date: **September 28, 2006**

Date form completed: **October 3, 2006**

Inspection by: **Terry Nelson**

Inspection agency: **DEQ NRO**

Time spent: **12 hours**

Announced: **Yes**

Reviewed by:

Scheduled: **Yes**

Present at inspection: **Darren Quann, Doug Crooks**

TYPE OF FACILITY:

Domestic

[ ] Federal
[**X**] Nonfederal

[ ] Major
[**X**] Minor

Industrial

[ ] Major [ ] Primary
[ ] Minor [ ] Secondary

Type of inspection:

[**X**] Routine
[ ] Compliance/Assistance/Complaint
[ ] Reinspection

Date of last inspection: **January 30, 2002**
Agency: **DEQ NRO**

Population served: **700 estimated**

Connections served: **280**

Last month average: (Influent) Month/year: **No data**

Last month average: (Effluent) Month/year: **August 2006**

Flow:	**0.033**	**MGD**	pH:	**7.3**	**S.U.**	TSS:	**4.5**	**mg/L**
$CBOD_5$	**5**	**mg/L**	NH_3	**0.5**	**mg/L**	DO	**6.7**	**mg/L**

Quarter average: (Effluent) **June – August 2006**

Flow:	**0.033**	**MGD**	pH:	**7.55**	**S.U.**	TSS:	**4.67**	**mg/L**
$CBOD_5$	**5**	**mg/L**	NH_3	**0.53**	**mg/L**	DO	**6.37**	**mg/L**

DATA VERIFIED IN PREFACE [**X**] Updated [ ] No changes

Has there been any new construction? [ ] Yes [**X**] No

If yes, were plans and specifications approved? [ ] Yes [ ] No [**X**] NA

DEQ approval date:

(A) PLANT OPERATION AND MAINTENANCE

1.	Class and number of licensed operators:	**Dabney & Crooks provides Class III or higher operators.**		
2.	Hours per day plant is manned:	**Approximately one hour per day**		
3.	Describe adequacy of staffing.	[ ] Good	[**X**] Average	[ ] Poor
4.	Does the plant have an established program for training personnel?	[**X**] Yes	[ ] No	
5.	Describe the adequacy of the training program.	[**X**] Good	[ ] Average	[ ] Poor
6.	Are preventive maintenance tasks scheduled?	[**X**] Yes	[ ] No	
7.	Describe the adequacy of maintenance.	[ ] Good	[**X**] Average	[ ] Poor*
8.	Does the plant experience any organic/hydraulic overloading? If yes, identify cause and impact on plant:	[ ] Yes	[**X**] No	
9.	Any bypassing since last inspection?	[ ] Yes	[**X**] No	
10.	Is the standby electric generator operational?	[**X**] Yes	[ ] No*	[ ] NA
11.	Is the STP alarm system operational?	[**X**] Yes	[ ] No*	[ ] NA
12.	How often is the standby generator exercised? Power Transfer Switch? Alarm System?	**No records of testing** **No records of testing** **See comments**		
13.	When was the cross connection control device last tested on the potable water service?	**No record of testing**		
14.	Is sludge being disposed in accordance with the approved sludge disposal plan?	[**X**] Yes	[ ] No	[ ] NA
15.	Is septage received by the facility? Is septage loading controlled? Are records maintained?	[ ] Yes [ ] Yes [ ] Yes	[**X**] No [**X**] No [**X**] No	
16.	Overall appearance of facility:	[ ] Good	[**X**] Average	[ ] Poor

Comments:

4. **Dabney & Crooks staff receiving training at DEQ/VA Tech Short School, on the job, and via other sources.**
12. **The lights and audible alarms do not work according to Mr. Quann. He can verify the blower relays work based on visual and audible observations during routine operations.**

This facility has a Class I reliability rating which requires a back-up power source be available. The on-site generator and power transfer switch must be repaired and then tested on a routine basis per SCAT regulations 9 VAC 25-790-490.

(B) PLANT RECORDS

1. Which of the following records does the plant maintain?

Operational Logs for each unit process	[ ] Yes	[**X**] No	[ ] NA
Instrument maintenance and calibration	[**X**] Yes	[ ] No	[ ] NA
Mechanical equipment maintenance	[**X**] Yes	[ ] No	[ ] NA
Industrial waste contribution (Municipal Facilities)	[ ] Yes	[ ] No	[**X**] NA

2. What does the operational log contain?

[**X**] Visual observations
[ ] Laboratory results
[ ] Control calculations
[**X**] Flow measurement
[**X**] Process adjustments
[ ] Other (specify)

Comments:

3. What do the mechanical equipment records contain?

[**X**] As built plans and specs
[**X**] Manufacturers instructions
[**X**] Lubrication schedules
[ ] Spare parts inventory
[**X**] Equipment/parts suppliers
[ ] Other (specify)

Comments:

4. What do the industrial waste contribution records contain? (Municipal Only)

[ ] Waste characteristics
[ ] Impact on plant
[ ] Locations and discharge types
[ ] Other (specify)

Comments: **No industrial contributors**

5. Which of the following records are kept at the plant and available to personnel?.
[**X**] Equipment maintenance records
[ ] Industrial contributor records
[**X**] Sampling and testing records
[**X**] Operational Log
[ ] Instrumentation records

6. Records not normally available to plant personnel and their location: **None**

7. Were the records reviewed during the inspection? [**X**] Yes [ ] No

8. Are the records adequate and the O & M Manual current? [**X**] Yes [ ] No

9. Are the records maintained for the required 3-year time period? [**X**] Yes [ ] No

Comments:

(C) SAMPLING

1. Do sampling locations appear to be capable of providing representative samples? [**X**] Yes [ ] No*
2. Do sample types correspond to those required by the VPDES permit? [**X**] Yes [ ] No*
3. Do sampling frequencies correspond to those required by the VPDES permit? [**X**] Yes [ ] No*
4. Are composite samples collected in proportion to flow? [ ] Yes [ ] No* [**X**] NA
5. Are composite samples refrigerated during collection? [ ] Yes [ ] No* [**X**] NA
6. Does plant maintain required records of sampling? [**X**] Yes [ ] No*
7. Does plant run operational control tests? [**X**] Yes [ ] No

Comments:

(D) TESTING

1. Who performs the testing? [**X**] Plant [ ] Central Lab [**X**] Commercial Lab

Name: **Plant does pH, DO, chlorine**
Dabney and Crooks does $CBOD_5$, TSS, and Ammonia

If plant performs any testing, complete 2-4.

2. What method is used for chlorine analysis? **DPD – Hach Colorimeter**
3. Does plant appear to have sufficient equipment to perform required tests? [**X**] Yes [ ] No*
4. Does testing equipment appear to be clean and/or operable? [**X**] Yes [ ] No*

Comments:

(E) FOR INDUSTRIAL FACILITIES WITH TECHNOLOGY BASED LIMITS ONLY

1. Is the production process as described in the permit application? (If no, describe changes in comments)
   [ ] Yes [ ] No [**X**] NA
2. Do products and production rates correspond as provided in the permit application? (If no, list differences)
   [ ] Yes [ ] No [**X**] NA
3. Has the State been notified of the changes and their impact on plant effluent? Date:
   [ ] Yes [ ] No* [**X**] NA

Comments:

UNIT PROCESS: Screening/Comminution

1. Number of Units: Manual: **1** Mechanical:

   Number in operation: Manual: **1** Mechanical:

2. Bypass channel provided: [ ] Yes [**X**] No*
   Bypass channel in use: [ ] Yes [**X**] No

3. Area adequately ventilated: [**X**] Yes [ ] No*

4. Alarm system for equipment failure or overloads: [ ] Yes [**X**] No*

5. Proper flow distribution between units: [ ] Yes [ ] No [**X**] NA

6. How often are units checked and cleaned? **Unit is checked during each visit.**

7. Cycle of operation: **Continuous**

8. Volume of screenings removed: **5 gallon/month**

9. General condition: [ ] Good [**X**] Fair [ ] Poor

Comments:

- **The comminutor has been removed as each home has a grinder pump.**

UNIT PROCESS: Grit Removal

1. Number of units: In operation:

2. Unit adequately ventilated: [ ] Yes [ ] No*

3. Operation of grit collection equipment: [ ] Manual [ ] Time clock [ ] Continuous duty

4. Proper flow distribution between units: [ ] Yes [ ] No* [ ] NA

5 Daily volume of grit removed:

6. All equipment operable: [ ] Yes [ ] No*

7. General condition: [ ] Good [ ] Fair [ ] Poor

Comments:

- **No grit removal process.**

UNIT PROCESS: Flow Equalization

1. Type: [**X**] In-line [ ] Side-line [ ] Spill pond — Number of cells: **1**
2. What unit process does it precede? **Activate Sludge**
3. Is volume adequate? [**X**] Yes [ ] No
4. Mixing: [ ] None [**X**] Diffused air [ ] Fixed mechanical [ ] Floating mechanical
5. Condition of mixing equipment: [ ] Good [**X**] Average [ ] Poor
6. How drawn off?
   A. Pumped from: [ ] Surface [**X**] Sub-surface [ ] Adjustable
   B. Weir [**X**] Surface [ ] Sub-surface
7. Is containment structure in good condition? [**X**] Yes [ ] No
8. Are the facilities to flush solids and grease from basin walls adequate? [**X**] Yes [ ] No [ ] NA
9. Are there facilities for withdrawing floating material and foam? [ ] Yes [**X**] No
10. How are solids removed? [**X**] Drain down [ ] Drag line [ ] NA [ ] Other
    Is it adequate? [**X**] Yes [ ] No
11. Is the emergency overflow in good condition? [ ] Yes [ ] No [**X**] NA
12. Are the depth gauges in good condition? [ ] Yes [ ] No [**X**] NA

Comments:

1. There is a single 16,486 gallon tank preceding activated sludge.

UNIT PROCESS: Aerobic Digestion

1. Number of units:	**1**	In operation:	**None**	
2. Type of sludge treated	[ ] Primary	[**X**] WAS	[ ] Other	
3. Frequency of sludge application to digestors:	**30 minutes every other day**			
4. Supernatant return rate:	**Not measured**			
5. pH adjustment provided:	[ ] Yes	[**X**] No		
Utilized:	[ ] Yes	[ ] No	[ ] NA	
6. Tank contents well-mixed and relatively free of odors:	[ ] Yes	[ ] No*	[**X**] NA	
7. If diffused aeration is used, do diffusers require frequent cleaning?	[ ] Yes	[ ] No	[**X**] NA	
8. Location of supernatant return:	[**X**] Head	[ ] Primary	[ ] Other	
9. Process control testing:				
a. reduction of volatile solids	[ ] Yes	[**X**] No		
b. pH	[ ] Yes	[**X**] No		
c. alkalinity	[ ] Yes	[**X**] No		
d. dissolved oxygen	[ ] Yes	[**X**] No		
10. Foaming problem present:	[ ] Yes*	[**X**] No		
11. Signs of short-circuiting or overloads:	[ ] Yes*	[ ] No	[**X**] NA	
12. General condition:	[ ] Good	[**X**] Fair	[ ] Poor	

Comments:

- **The aerobic digester is currently used as a sludge holding tank.**
- **The staff currently decants the sludge holding tank one day and adds waste sludge the next day.**
- **The tank was empty at the time of inspection.**
- **The current schedule has a septage hauler empty the tank once per week.**

UNIT PROCESS: Activated Sludge Aeration

1. Number of units: **1** In operation: **1**

2. Mode of operation: **Completely mixed, extended aeration**

3. Proper flow distribution between units: [ ] Yes [ ] No* [**X**] NA

4. Foam control operational: [ ] Yes [**X**] No* [ ] NA

5. Scum control operational: [ ] Yes [ ] No* [**X**] NA

6. Evidence of following problems:

a. dead spots	[ ] Yes*	[**X**] No
b. excessive foam	[ ] Yes*	[**X**] No
c. poor aeration	[ ] Yes*	[**X**] No
d. excessive aeration	[ ] Yes*	[**X**] No
e. excessive scum	[ ] Yes*	[**X**] No
f. aeration equipment malfunction	[ ] Yes*	[**X**] No
g. other (identify in comments)	[ ] Yes*	[**X**] No

7. Mixed liquor characteristics (as available):

pH:	**6.5**	**s.u.**
MLSS:	**3500**	**mg/L**
DO:	**1.5**	**mg/L**
SVI:	**115**	
Color:	**Chocolate**	
Odor:	**Earthy**	
Settleability:	**400**	**ml/L**
Others (identify):		

8. Return/waste sludge:
   A. Return Rate: **Constant, unmeasured rate**
   B. Waste Rate: **Not measured**
   C. Frequency of Wasting: **30 minutes, every other day**

9. Aeration system control: [**X**] Time Clock [ ] Manual [ ] Continuous [ ] Other (explain)

10. Effluent control devices working properly (oxidation ditches): [ ] Yes [ ] No* [**X**] NA

11. General condition: [ ] Good [**X**] Fair [ ] Poor

Comments:
9. Aeration is 15 minutes on and 45 minutes off.

UNIT PROCESS: Sedimentation

[ ] Primary [**X**] Secondary [ ] Tertiary

1.	Number of units: **1** In operation: **1** **The clarifier is one unit with two 7,500 gallon hoppers**			
2.	Proper flow distribution between units:	[**X**] Yes	[ ] No*	[ ] NA
3.	Signs of short circuiting and/or overloads:	[ ] Yes	[**X**] No	
4.	Effluent weirs level: Clean:	[**X**] Yes [**X**] Yes	[ ] No* [ ] No*	
5.	Scum collection system working properly:	[ ] Yes	[**X**] No*	[ ] NA
6.	Sludge collection system working properly:	[**X**] Yes	[ ] No*	
7.	Influent, effluent baffle systems working properly:	[**X**] Yes	[ ] No*	
8.	Chemical addition: Chemicals:	[ ] Yes	[**X**] No	
9.	Effluent characteristics: **Clear**			
10.	General condition:	[ ] Good	[**X**] Fair	[ ] Poor

Comments:

5. Both sides of the clarifier had a scum layer on the top that covered almost the entire surface. According to Mr. Crooks, this is an intermittent problem. Darren said he notices the fall and spring temperature changes frequently precede a layer forming. The operators either let the system recycle the material or have a septage hauler collect it when the sludge holding tank is emptied.

UNIT PROCESS: Filtration

1. Type of filters: [**X**] Gravity [ ] Pressure [ ] Intermittent

2. Number of units: **2** In operation: **2**

3. Operation of system: [**X**] Automatic [ ] Semi-automatic [ ] Manual [ ] Other(specify)

4. Proper flow distribution between units: [**X**] Yes [ ] No* [ ] NA

5. Evidence of following problems:

a. uneven flow distribution	[ ] Yes*	[**X**] No
b filter clogging (ponding)	[ ] Yes*	[**X**] No
c. nozzles clogging	[ ] Yes*	[**X**] No
d. icing	[ ] Yes*	[**X**] No
e. filter flies	[ ] Yes*	[**X**] No
f. vegetation on filter	[ ] Yes*	[**X**] No

6. Filter aid system provided: [**X**] Yes [ ] No
   Properly operating: [**X**] Yes [ ] No [ ] NA
   Chemical used: **A Sanuril chlorine tablet feeder precedes the filters.**

7. Automatic valves properly operating: [ ] Yes* [ ] No* [**X**] NA

8. Valves sequencing correctly: [ ] Yes* [ ] No* [**X**] NA

9. Backwash system operating properly: [**X**] Yes* [ ] No* [ ] NA

10. Filter building adequately ventilated: [ ] Yes* [ ] No* [**X**] NA

11. Effluent characteristics: **Clear**

12. General condition: [ ] Good [**X**] Fair [ ] Poor

Comments:

UNIT PROCESS: Chlorination

1 No. of chlorinators: **1** In operation: **1**

2. No. of evaporators: In operation:

3. No. of chlorine contact tanks: **1** In operation: **1**

4. Proper flow distribution between units: [ ] Yes [ ] No* [**X**] NA

5. How is chlorine introduced into the wastewater?
   [ ] Perforated diffusers
   [ ] Injector with single entry point
   [**X**] Other: **Chlorine tablet feeder**

6. Chlorine residual in basin effluent: **0.26 mg/L (DEQ, 1708 hours)**

7. Applied chlorine dosage: **Two of four tubes were on-line**

8. Contact basins adequately baffled: [**X**] Yes [ ] No*

9. Adequate ventilation: **Not applicable**
   a. cylinder storage area [ ] Yes [ ] No*
   b. equipment room [ ] Yes [ ] No*

10. Proper safety precautions used: [**X**] Yes [ ] No*

11. General condition: [**X**] Good [ ] Fair [ ] Poor

Comments:

- **The plant has a chlorine tablet feeder preceding the filters and following the filters.**
- **They are currently chlorinating prior to the filters to control algal growth.**
- **The operator checked the unit after the chlorine test and found the tablets had bridged.**

UNIT PROCESS: Dechlorination

1. Chemical used: [ ] Sulfur Dioxide [ ] Bisulfite [**X**] Other: **Sodium Sulfite**

2. No. of sulfonators: In operation:

3. No. of evaporators: In operation:

4. No. of chemical feeders: **1** In operation: **1**

5. No. of contact tanks: **1** In operation: **1**

6. Proper flow distribution between units: [ ] Yes [ ] No* [**X**] NA

7. How is chemical introduced into the wastewater?
   [ ] Perforated diffusers
   [ ] Injector with single entry point
   [**X**] Other: **Tablet feeder**

8. Control system operational: [ ] Yes [ ] No* [**X**] NA
   a. residual analyzers: [ ] Yes [ ] No* [**X**] NA
   b. system adjusted: [ ] Automatic [ ] Manual [**X**] Other: **NA**

9. Applied dechlorination dose: **Two of four tubes were on-line**

10. Chlorine residual in basin effluent: **0.00 mg/L (< QL) (DEQ, 1715 hours)**

11. Contact basins adequately baffled: [**X**] Yes [ ] No* [ ] NA

12. Adequate ventilation: **Not applicable**
    a. cylinder storage area: [ ] Yes [ ] No*
    b. equipment room: [ ] Yes [ ] No*

13. Proper safety precautions used: [**X**] Yes [ ] No*

14. General condition: [**X**] Good [ ] Fair [ ] Poor

Comments:

UNIT PROCESS: Post Aeration

1. Number of units: **1** In operation: **1**

2. Proper flow distribution between units: [ ] Yes [ ] No* [**X**] NA

3. Evidence of following problems:
   a. dead spots [ ] Yes* [**X**] No
   b. excessive foam [ ] Yes* [**X**] No
   c. poor aeration [ ] Yes* [**X**] No
   d. mechanical equipment failure [ ] Yes* [**X**] No [ ] NA

4. How is the aerator controlled? [ ] Time clock [**X**] Manual [ ] Continuous [ ] Other* [ ] NA

5. What is the current operating schedule? **Post aeration is activated when needed**

6. Step weirs level: [ ] Yes [ ] No [**X**] NA

7. Effluent D.O. level: **6.12 mg/L (24.4° C, DEQ, 1637 hours)**

8. General condition: [**X**] Good [ ] Fair [ ] Poor

Comments:

- **If the operator collects the DO in the Post Aeration basin, please advise operators to collect the DO when the blowers are not running.**

UNIT PROCESS: Flow Measurement

[ ] Influent [ ] Intermediate [**X**] Effluent

1. Type measuring device: **Totalizer meter**
2. Present reading: **Not recorded**
3. Bypass channel: [ ] Yes [**X**] No
   Metered: [ ] Yes [**X**] No
4. Return flows discharged upstream from meter: [ ] Yes [**X**] No
   Identify:
5. Device operating properly: [**X**] Yes [ ] No*
6. Date of last calibration: **09/12/06**
7. Evidence of following problems:
   a. obstructions [ ] Yes* [**X**] No
   b. grease [ ] Yes* [**X**] No
8. General condition: [**X**] Good [ ] Fair [ ] Poor

Comments:

- **The meter was repaired 6-8 months ago and appears to be working properly.**

UNIT PROCESS: Effluent/Plant Outfall

1. Type Outfall [**X**] Shore based [ ] Submerged
2. Type if shore based: [ ] Wingwall [ ] Headwall [**X**] Rip Rap
3. Flapper valve: [ ] Yes [**X**] No [ ] NA

Outfall was not observed during inspection. Please see comments.

4. Erosion of bank: [ ] Yes [ ] No [ ] NA
5. Effluent plume visible? [ ] Yes* [ ] No
6. Condition of outfall and supporting structures: [ ] Good [ ] Fair [ ] Poor*
7. Final effluent, evidence of following problems:
   a. oil sheen [ ] Yes* [ ] No
   b. grease [ ] Yes* [ ] No
   c. sludge bar [ ] Yes* [ ] No
   d. turbid effluent [ ] Yes* [ ] No
   e. visible foam [ ] Yes* [ ] No
   f. unusual color [ ] Yes* [ ] No

Comments:

- **The outfall is located near the dam for the subdivision's lake.**
- **The access is on the other side of the subdivision as the treatment plant.**
- **According to Mr. Crooks, the outfall area is overgrown with the possibility of snakes.**
- **Inspection staff hopes to inspect the outfall during different conditions, possibly as part of the permit re-issuance process.**

ANALYST:	**Darren Quann**	VPDES NO.	**VA0086720**

Parameter: Dissolved Oxygen
Method: Electrode
03/01

METHOD OF ANALYSIS:

X	18th EDITION OF STANDARD METHODS-4500-O G
	ASTM-D-888-92(B)
	EPA METHODS FOR CHEMICAL ANALYSIS-360.1
	USGS-METHODS IN WATER AND FLUVIAL SEDIMENTS-I-1576-78

		Y	N
1)	If samples are collected, is collection carried out with a minimum of turbulence and air bubble formation? [SM4500-O B.3; 360.1-3.1]	**In-Situ**	
2)	If samples are collected, is the sample bottle allowed to overflow several times its volume? [SM4500-O B.3; 360.1-3.1]	**In-Situ**	
3)	Are meter and electrode operable and providing consistent readings? [Permit]	**X**	
4)	Is membrane in good condition without trapped air bubbles? [SM 4500-O G.3.b]	**X**	
5)	Is correct filling solution used in electrode? [Mfr.]	**X**	
6)	Is meter calibrated before use or at least daily? [Mfr.]	**X**	
7)	Is calibration procedure performed according to manufacturer's instructions? [Mfr.]	**X**	
8)	Are water droplets shaken off the membrane prior to calibration? [Mfr.]	**X**	
9)	Is sample stirred during analysis? [Mfr.]	**In-Situ**	
10)	Is the sample analysis procedure performed according to manufacturer's instructions? [Mfr.]	**X**	
11)	Is meter stabilized before reading D.O.? [Mfr.]	**X**	
12)	Is electrode stored according to manufacturer's instructions? [Mfr.]	**X**	

COMMENTS:	**1. Temperature sensor was verified against a NIST thermometer on 09/28/06 at 21° C.** **2. DEQ meter read approximately 1 mg/L higher than plant meter.**
PROBLEMS:	**No problems observed.**

ANALYST:	**Darren Quann**	VPDES NO	**VA0086720**

Parameter: Hydrogen Ion (pH)
Method: Electrometric
08/06

X	18th EDITION STANDARD METHODS-4500-H-B
	EPA METHODS FOR CHEMICAL ANALYSIS-150.1
	ASTM-D1293-84(90)(A or B)
	USGS-METHODS IN WATER AND FLUVIAL SEDIMENTS-I-1586-85

		Y	N
1)	Is the electrode in good condition (no chloride precipitate, etc.)? [SM-2.b/c and 5.b; 150.1-4.3/Permit]	X	
2)	Is electrode storage solution in accordance with manufacturer's instructions? [Mfr.]	X	
3)	Is meter calibrated on at least a daily basis? [SM-4.a; 150.1-8.1]	X	
4)	Are two buffers which bracket the anticipated range of the sample used to calibrate the meter? (For meters not capable of performing a two point calibration is a second buffer which brackets the sample pH analyzed and found to be within ±0.1 SU of the expected value? [SM-2.a; 150.1-7.2]	X	
5)	Is meter calibration documented? [Permit]	X	
6)	Does meter read within 0.1 SU for the pH of the second buffer solution? [SM-4.a/5.b; 150.1-7.2.1]	X	
7)	After calibration, is a buffer of 7 SU analyzed as a check sample to verify that calibration is correct? Agreement should by within ± 0.1 SU. [Permit]	X	
8)	Do the buffer solutions appear to be free of contamination or growths? [SM-3.a; Permit]	X	
9)	Are buffer solutions within their listed shelf life or have they been prepared within the last 4 weeks? [SM-3.a; 150.1-6.1.1]	X	
10)	Is the cap or sleeve covering the access hole on the reference electrode removed when measuring pH? [Mfr.]	NA	
11)	Is the temperature of buffer solutions and samples measured prior to testing? [SM-1.a; 150.1-9.1]	X	
12)	For meters with ATC that also have temperature display, was the thermometer calibrated annually?	X	
13)	Was the electrode rinsed between solutions? [SM-4.a; 150.1-8.4]	X	
14)	Was the electrode blotted dry between solutions (disregard if rinse is next solution)? [SM-4.a; 150.1-8.4]	X	
15)	Is the sample stirred gently at a constant speed during measurement? [SM-4.b; 150.1-8.4]	X	
16)	Does the meter hold a steady reading after reaching equilibrium? [SM-4.b/5 ;150.1-8.4]	X	

COMMENTS:	**1. Temperature sensor was verified against a NIST thermometer on 09/28/06 at 22° C.** **2. Effluent pH was measured at 7.89 SU @ 24.9° C at 1650 hours.**
PROBLEMS:	**No problems observed.**

ANALYST:	**Darren Quann**	VPDES NO	**VA0086720**

Parameter: Total Residual Chlorine
Method: DPD Colorimetric (HACH Pocket Colorimeter™)
04/02

METHOD OF ANALYSIS:

X	MANUFACTURER'S INSTRUCTIONS (HACH METHOD 8167)

		Y	N
1)	Are the DPD PermaChem® Powder Pillows stored in a cool, dry place? [Mfr.]	X	
2)	Are the pillows within the manufacturer's expiration date? [Permit]	X	
3)	Has buffering capability of DPD pillows been checked annually? (Pillows should adjust sample pH to between 6 and 7) [Permit]	X	
4)	When pH adjustment is required, is H_2SO_4 or NaOH used? [11.3.1]	X	
5)	Are cells clean and in good condition? [Permit]	X	
6)	Is the low range (0.01-mg/L resolution) used for samples containing residuals from 0-2.00 mg/L? [Mfr.]	X	
7)	Is the 10-mL cell (2.5-cm diameter) used for samples from 0-2.00 mg/L? [Mfr.]	X	
8)	Is the meter zeroed correctly by using sample as blank for the cell used? [Mfr.]	X	
9)	Is the instrument cap placed correctly on the meter body when the meter is zeroed and when the sample is analyzed? [Mfr.]	X	
10)	Is the DPD Total Chlorine PermaChem® Powder Pillow mixed into the sample? [11.1]	X	
11)	Is the analysis made at least three minutes but not more than six minutes after PermaChem® Powder Pillow addition? [11.2]	X	
12)	If read-out is flashing [2.20], is sample diluted correctly, then reanalyzed? [1.2 & 2.0]	X	
13)	When instrument was new to lab, was instrument calibration verified by analyzing a Quality Control Sample (i.e. Spec-check™, alternate source standard) prior to any data being reported? [Permit]	**See notes**	
14)	Is a Quality Control Sample (i.e. Spec- check™, alternate source standard) analyzed quarterly? [9.2.3]	**See notes**	

COMMENTS:	**13,14) Meters are maintained by Mr. Dabney and Darren was not aware of schedule for running Spec Check samples.**
PROBLEMS:	• **Chlorine contact chamber reading too low, Darren found tablets in feeder had bridged.** • **He fixed problem and planned to retest prior to leaving site.** • **DEQ will need documents to show chlorine meter is tested quarterly.**

To: Joan C. Crowther
From: Katie Conaway, Jennifer O'Reilly

Date: July 14, 2010
Subject: Planning Statement for Presidential Lakes, Section 14
Permit Number: VA0086720

Discharge Type: Municipal, Minor
Discharge Flow: 0.035 MGD, Expansion to 0.07 MGD

Receiving Stream: Popcastle Creek
Latitude / Longitude: 38° 17' 26" / 77° 14' 47"
Waterbody ID: E21R, RA49

1. Is there monitoring data for the receiving stream?

No.

- If yes, please attach latest summary.
- If no, where is the nearest downstream monitoring station.

The nearest downstream DEQ monitoring station with ambient data is Station 3-LAM000.57, located on Lambs Creek at the Route 3 bridge crossing, approximately 2.67 rivermiles downstream from the Outfall of VA0086720. Station 3-LAM000.57 is located on Assessment Unit VAN-E21R_LAM01A08, which extends from the confluence with Popcastle Creek downstream until tidal waters, near the confluence with the Rappahannock River. The following is a monitoring summary for VAN-E21R_LAM01A08 as taken from the 2008 Integrated Assessment:

Class III, Section 4.

DEQ ambient water quality monitoring station 3-LAM000.57, at Route 3.

E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. The aquatic life and wildlife uses are considered fully supporting. The fish consumption use was not assessed.

2. Is the receiving stream on the current 303(d) list?

The receiving stream, Popcastle Creek, is not on the 303(d) list.

- If yes, what is the impairment?

N/A

Attachment 5

- Has the TMDL been prepared?

N/A

- If yes, what is the WLA for the discharge?

N/A

- If no, what is the schedule for the TMDL?

N/A

3. If the answer to (2) above is no, is there a downstream 303(d) listed impairment?

Yes. VA0086720 discharges to Popcastle Creek, which flows into Lambs Creek. Lambs Creek, in turn, flows into the Rappahannock River. Both Lambs Creek and the Rappahannock River are on the 303(d) list.

- If yes, what is the impairment?

Lambs Creek: Assessment Unit VAN-E21R_LAM01A08, which extends from the confluence with Popcastle Creek downstream until tidal waters, near the confluence with the Rappahannock River, is listed as impaired for not meeting the recreational water quality use standard. Sufficient excursions from the maximum *E. coli* bacteria criterion (3 of 7 samples - 42.8%) were recorded at DEQ's ambient water quality monitoring station (3-LAM000.57) at the Route 3 crossing to assess this stream segment as not supporting of the recreation use goal for the 2008 water quality assessment.

Tidal Rappahannock River: The entire tidal portion of the Rappahannock River, from the I-95 Bridge above Fredericksburg downstream to the mouth of the river near Stingray Point, is listed as impaired for not meeting the fish consumption use. The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 12/13/04, limits American eel, blue catfish, carp, channel catfish, croaker, gizzard shad, and anadromous (coastal) striped bass consumption to no more than two meals per month. The affected area extends from the I-95 Bridge above Fredericksburg downstream to the mouth of the river near Stingray Point, including its tributaries Hazel Run up to the I-95 bridge crossing and Claiborne Run up to the Route 1 bridge crossing. Excursions above the water quality criterion based tissue value (TV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue were recorded in four species of fish (6 total samples) collected in 2001 and 2006 at monitoring station 3-RPP107.33 (carp, channel catfish, gizzard shad, stripped bass). As a result, the waters were assessed as not supporting of the CWA's fish consumption use goal.

Tidal Freshwater Rappahannock River (RPPTF): The Tidal Freshwater Rappahannock River (RPPTF) is listed as impaired for not meeting the aquatic life use. The RPPTF extends from the fall line, near the Route 1 Bridge Crossing in Fredericksburg, downstream to rivermile 57.85. An open water assessment of dissolved oxygen values during the

summer season showed that the RPPTF was not supporting. The RPPTF was 0.999 percent above CFD. The segment is considered impaired for the aquatic life use.

Portion of the Tidal Freshwater Rappahannock River: A portion of the tidal freshwater Rappahannock River is listed as impaired for not meeting the recreational use. The recreational use impairment extends from the fall line at the Route 1 Bridge Crossing, downstream to the confluence with Mill Creek. The assessment units and monitoring stations on the Rappahannock River that are located downstream from the confluence of Lams Creek are listed below:

VAN-E21E_RPP04A02: Segment begins at the confluence with Ware Creek and continues downstream until the confluence with Mount Creek. Sufficient excursions from the instantaneous E. coli bacteria criterion (6 of 36 samples - 16.7%) were recorded at DEQ's ambient water quality monitoring station (3-RPP091.55) at Buoy 89 to assess this stream segment as not supporting of the recreation use goal for the 2008 water quality assessment.

VAN-E21E_RPP03A02: Segment begins at the confluence with Mount Creek and continues downstream until the confluence with Mill Creek. Sufficient excursions from the instantaneous E. coli bacteria criterion (4 of 36 samples - 11.1%) were recorded at DEQ's ambient water quality monitoring station (3-RPP080.19) at Route 301 to assess this stream segment as not supporting of the recreation use goal for the 2008 water quality assessment.

- Has a TMDL been prepared?

Lambs Creek – Recreation: No. This is a nested impairment. See note below. **
Tidal Rappahannock PCBs in Fish Tissue: No
RPPTF Aquatic Life Use: No.
Recreational Impairment on RPPTF – Yes. TMDL was approved by EPA 5/5/2008.

- Will the TMDL include the receiving stream?

None of the TMDLs will specifically include the receiving stream; however, all TMDLs will consider upstream point source discharges.

- Is there a WLA for the discharge?

Yes. The Bacteria TMDL that was done for the upper portion of the Tidal Freshwater Rappahannock River included a WLA of **1.22E+11 cfu/year of *E. coli* bacteria** for VA0086720. This WLA was calculated using the maximum permitted design flow (0.07 MGD).

- What is the schedule for the TMDL?

****Lambs Creek – Recreation:** The bacteria TMDL for Lambs Creek is due by 2020; however, with the expected approval of the 2010 Assessment Guidance, a TMDL will not be required for this segment because it is "nested" within a completed bacteria TMDL. The

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Attachment 6

Facility Name: Presidential Lakes, Section 14 Permit No.: VA0086720

Receiving Stream: Popcastle Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	50	mg/L
90% Temperature (Annual) =	0	deg C
90% Temperature (Wet season) =	0	deg C
90% Maximum pH =	0	SU
10% Maximum pH =	0	SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows

1Q10 (Annual) =	0	MGD
7Q10 (Annual) =	0	MGD
30Q10 (Annual) =	0	MGD
1Q10 (Wet season) =	0	MGD
30Q10 (Wet season)	0	MGD
30Q5 =	0	MGD
Harmonic Mean =	0	MGD

Mixing Information

Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information

Mean Hardness (as CaCO3) =	50	mg/L
90% Temp (Annual) =	25	deg C
90% Temp (Wet season) =	0	deg C
90% Maximum pH =	8	SU
10% Maximum pH =		SU
Discharge Flow =	0.07	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00
Acrylonitrile C	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00
Aldrin C	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	8.41E+00	1.24E+00	na	--	8.4E+00	1.2E+00	na	--	--	--	--	--	--	--	--	--	8.4E+00	1.2E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	8.41E+00	2.43E+00	na	--	8.4E+00	2.4E+00	na	--	--	--	--	--	--	--	--	--	8.4E+00	2.4E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene C	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02
Benzidine C	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03
Benzo (a) anthracene C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (b) fluoranthene C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (k) fluoranthene C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Benzo (a) pyrene C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Bis2-Chloroethyl Ether C	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04
Bis 2-Ethylhexyl Phthalate C	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01
Bromoform C	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
Cadmium	0	1.8E+00	6.6E-01	na	--	1.8E+00	6.6E-01	na	--	--	--	--	--	--	--	--	--	1.8E+00	6.6E-01	na	--
Carbon Tetrachloride C	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Chlordane C	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	3.2E+02	4.2E+01	na	--	3.2E+02	4.2E+01	na	--	--	--	--	--	--	--	--	--	3.2E+02	4.2E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	7.0E+00	5.0E+00	na	--	7.0E+00	5.0E+00	na	--	--	--	--	--	--	--	--	--	7.0E+00	5.0E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD[C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE[C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	4.9E+01	5.6E+00	na	--	4.9E+01	5.6E+00	na	--	--	--	--	--	--	--	--	--	4.9E+01	5.6E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	- -	- -	1.4E+00	7.7E-01	- -	- -	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	- -	- -
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.0E+02	1.1E+01	na	4.6E+03	1.0E+02	1.1E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.0E+02	1.1E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	4.0E+00
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E+03**
Silver	0	1.0E+00	--	na	--	1.0E+00	--	na	--	--	--	--	--	--	--	--	--	**1.0E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene[C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
Trichloroethylene[C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
2,4,6-Trichlorophenol[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
Zinc	0	6.5E+01	6.6E+01	na	2.6E+04	6.5E+01	6.6E+01	na	2.6E+04	--	--	--	--	--	--	--	--	**6.5E+01**	**6.6E+01**	**na**	**2.6E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	3.9E-01
Chromium III	2.5E+01
Chromium VI	6.4E+00
Copper	2.8E+00
Iron	na
Lead	3.4E+00
Manganese	na
Mercury	4.6E-01
Nickel	6.8E+00
Selenium	3.0E+00
Silver	4.2E-01
Zinc	2.6E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Presidential Lakes, Section 14
pH Data December 04 -April 07
Monthly Maximun Values

MSD	Parameter Description	CONC MAX
4/1/10	PH	8
3/1/10	PH	8.1
2/1/10	PH	7.8
1/1/10	PH	7.5
12/1/09	PH	8
11/1/09	PH	8.1
10/1/09	PH	8.1
9/1/09	PH	8
8/1/09	PH	7.9
7/1/09	PH	7.7
6/1/09	PH	7.8
5/1/09	PH	7.8
4/1/09	PH	7.9
3/1/09	PH	7.8
2/1/09	PH	7.8
1/1/09	PH	7.4
12/1/08	PH	7.6
11/1/08	PH	7.8
10/1/08	PH	7.5
9/1/08	PH	7.6
8/1/08	PH	7.8
7/1/08	PH	7.6
6/1/08	PH	7.4
5/1/08	PH	7.4
4/1/08	PH	7.6
3/1/08	PH	7.6
2/1/08	PH	7.6
1/1/08	PH	7.4
12/1/07	PH	7.4
11/1/07	PH	7.8
10/1/07	PH	7.6
9/1/07	PH	7.6
8/1/07	PH	7.7
7/1/07	PH	7.5
6/1/07	PH	7.8
5/1/07	PH	7.4
4/1/07	PH	7.4
3/1/07	PH	7.6
2/1/07	PH	8
1/1/07	PH	7.3
12/1/06	PH	7.3
11/1/06	PH	7.3
10/1/06	PH	7.5
9/1/06	PH	7.7
8/1/06	PH	7.3
7/1/06	PH	7.6
6/1/06	PH	8
5/1/06	PH	7.3
4/1/06	PH	7.2
3/1/06	PH	7.1
2/1/06	PH	7.2
1/1/06	PH	7.1
12/1/05	PH	7.2
11/1/05	PH	7.6
10/1/05	PH	7.7
9/1/05	PH	7.6

90th percentile 8.00

Attachment 7

Presidential Lakes, Section 14
pH Data December 04 -April 07
Monthly Maximun Values

8/1/05	PH	7.9
7/1/05	PH	7.6
6/1/05	PH	7.8
5/1/05	PH	7.6
4/1/05	PH	7.9
3/1/05	PH	7.9
2/1/05	PH	7.6
1/1/05	PH	8
12/1/04	PH	7.4

Define Point of Interest

38,17,25.9 -77,14,46.9
is the Search Point

Submit Cancel

Search Point
- **Change** to "clicked" map point
- **Fixed** at 38,17,25.9 - 77,14,46.9

Show Position Rings
Yes No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
Yes No
2 miles

Search Point is at map center

Base Map Choices
Topography

Map Overlay Choices
Current List: Position, Search

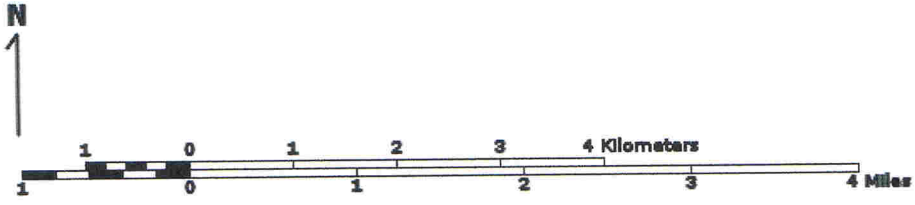
Map Overlay Legend

Position Rings 1 mile and 1 4 mile at the Search Point

2 mile radius Search Area

Refresh Browser Page

Map Click Pan In M Map Scale In Zoom Out Screen Size Small Size Big Help



Point of Search 38,17,25.9 -77,14,46.9
Map Location 38,17,25.9 -77,14,46.9

Select **Coordinate System:**
- Degrees,Minutes,Seconds Latitude - Longitude
- Decimal Degrees Latitude - Longitude
- Meters UTM NAD83 East North Zone
- Meters UTM NAD27 East North Zone

Attachment 8

Base Map source: USGS 1:100,000 topographic maps (see terraserver-usa.com for details)

Map projection is UTM Zone 18 NAD 1983 with left 298756 and top 4245253. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West.Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5 square miles.

Black and white aerial photography aquired near 1990 and topographic maps are from the United States Department of the Interior, United States Geological Survey.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.nationa.geographic.com/topo
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2010-06-28 13:34:14 (qa/qc July 27, 2009 10:09 - tn=297976 dist=3218 I)

Virginia Department of Game and Inland Fisheries

6/28/2010 1:36:54 PM

Fish and Wildlife Information Service

VaFWIS Initial Project Assessment Report Compiled on 6/28/2010, 1:36:54 PM

Help

Known or likely to occur within a **2 mile radius of 38,17,25.9 -77,14,46.9** in **099 King George County, VA**

407 Known or Likely Species ordered by Status Concern for Conservation (displaying first 28) (28 species with Status* or Tier I**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
040096	ST	I	Falcon, peregrine	Falco peregrinus	Yes	CBC
040129	ST	I	Sandpiper, upland	Bartramia longicauda		BOVA
040293	ST	I	Shrike, loggerhead	Lanius ludovicianus	Yes	CBC,BOVA
040093	FSST	II	Eagle, bald	Haliaeetus leucocephalus	Yes	BBA,CBC,BOVA
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
040372	SS	I	Crossbill, red	Loxia curvirostra	Yes	CBC
010032	SS	II	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
040213	SS	II	Owl, northern saw-whet	Aegolius acadicus	Yes	CBC
040266	SS	II	Wren, winter	Troglodytes troglodytes	Yes	CBC,BOVA
030063	CC	III	Turtle, spotted	Clemmys guttata		BOVA
040094	SS	III	Harrier, northern	Circus cyaneus	Yes	BBA,CBC,BOVA
040034	SS	III	Heron, tricolored	Egretta tricolor		BOVA
040036	SS	III	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040204	SS	III	Owl, barn	Tyto alba pratincola	Yes	CBC,BOVA
040264	SS	IV	Creeper, brown	Certhia americana	Yes	CBC,BOVA
040180	SS	IV	Tern, Forster's	Sterna forsteri		BOVA
040364	SS		Dickcissel	Spiza americana	Yes	BBA,BOVA
040032	SS		Egret, great	Ardea alba egretta		BOVA
040366	SS		Finch, purple	Carpodacus purpureus	Yes	CBC,BOVA
040285	SS		Kinglet, golden-crowned	Regulus satrapa	Yes	CBC,BOVA
040112	SS		Moorhen, common	Gallinula chloropus cachinnans		BOVA

040262	SS		Nuthatch, red-breasted	Sitta canadensis	Yes	CBC,BOVA
040189	SS		Tern, Caspian	Sterna caspia		BOVA
040278	SS		Thrush, hermit	Catharus guttatus	Yes	CBC,BOVA
040314	SS		Warbler, magnolia	Dendroica magnolia		BOVA
050045	SS		Otter, northern river	Lontra canadensis lataxina		BOVA
040225		I	Sapsucker, yellow-bellied	Sphyrapicus varius	Yes	CBC,BOVA
040319		I	Warbler, black-throated green	Dendroica virens		BOVA

To view **All 407 species** View 407

* FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; SC=State Candidate; CC=Collection Concern; SS=State Special Concern

** I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Anadromous Fish Use Streams

N/A

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Cold Water Stream Survey (Trout Streams)
Managed Trout Species

N/A

Public Holdings:

N/A

audit no. 297976 6/28/2010 1:36:54 PM Virginia Fish and Wildlife Information Service

7/16/2010 11:03:55 AM

Facility = Presidential Lakes, Section 14
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 8.4
WLAc = 1.3
Q.L. = .2
# samples/mo. = 4
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 2.6229711214412
Average Weekly limit = 2.6229711214412
Average Monthly LImit = 1.79339282342347

The data are:

9

Attachment 9

PP[illegible]DENTIAL LAKES SECTION 14
V[illegible]86720
Attachment # 6

Ammonia Calculation - Acute for N Trout Waters

	Temperature	pH
DATA ENTRY:->	25	7.5

FT

FT=10^((.03)(20-25) if 25<=T<=30 = 0.7079458
FT=10^((.03)(20-T) if 0<=T<25 = NA
FT= ***0.7079458***

FPH

FPH=1 if 8.0<=pH<=9.0 = NA
FPH=((1+10^(7.4-pH))/1.25 if 6.5<=pH<8.0 = 1.4354626
FPH= **1.4354626**

Acute Criteria Concentration=.52/FT/FPH/2 = **0.2558477**

Conversion from un-ionized to Total Ammonia can be calculated by using the following formulas:
Total Acute Ammonia Criteria = Calculated un-ionized ammonia criteria divided by fraction of un-ionized Ammonia
Where: Fraction of un-ionized ammonia = 1/(10^(pKa-pH) +1) **Fraction= 0.0176772**
where: pKa = 0.09018 + (2729.92/273.2 + temperature 'C,) **pKa = 9.2448413**
Total Acute Ammonia Criteria = Calculated un-ionized Ammonia Criteria divided by fraction of un-ionized Ammonia
Total Acute Ammonia Criteria = **0.2558477** / **0.0176771779** = Total Ammonia = **14.4733324 mg/l**

Total Ammonia is then converted to Ammonia-Nitrogen.
TOTAL ACUTE N-NH3 **14.4733324 X .824** **11.9260259 MG/L** = **11.93**

Ammonia Calculation - Chronic for Non Trout Waters

	Temperature	pH
DATA ENTRY:->	25	7.5

FT

FT=10^((.03)(20-20)) if 20<=T<=30 = 1.0000000
FT=10^((.03)(20-T)) if 0<=T<20 = NA
FT= **1**

FPH

FPH=1 if 8.0<=pH<=9.0 = NA
FPH=((1+10^(7.4-pH))/1.25 if 6.5<=pH<8.0 = 1.4354626
FPH= **1.4354626**

Ratio

Ratio = 13.5 if 7.7<=pH<=9.0 = NA
Ratio = 20.25 x (10^(7.7-pH))/(1+(10^(7.4-pH)) if 6.5<=pH<7.7 = 17.8864081
Ratio = **17.886408**

Chronic Criteria Concentration=.8/FT/FPH/RATIO = **0.0311584**

Conversion from un-ionized to Total Ammonia can be calculated by using the following formulas:
Total Acute Ammonia Criteria = Calculated un-ionized ammonia criteria divided by fraction of un-ionized Ammonia
Where: Fraction of un-ionized ammonia = 1/(10^(pKa-pH) +1) **Fraction= 0.0176772**
where: pKa = 0.09018 + (2729.92/273.2 + temperature 'C) **pKa = 9.2448413**
Total Acute Ammonia Criteria=Calculated un-ionized Ammonia Criteria divided by fraction of un-ionized Ammonia
Total Acute Ammonia Criteria = **0.0311584** / **0.0176772** = Total Ammonia = **1.76263358 mg/l**

Total Ammonia is then converted to Ammonia-Nitrogen.
TOTAL CHRONIC N-NH3 **1.7626336 X .824** **1.4524101 MG/L** = **1.45**

Attachment 10

Analysis of the Presidential Lakes Section 14 STP effluent data for NH3

The statistics for NH3 are:

Number of values	=	1
Quantification level	=	.2
Number < quantification	=	0
Expected value	=	1.5
Variance	=	.8100001
C.V.	=	.6
97th percentile	=	3.650126
Statistics used	=	Reasonable potential assumptions - Type 2 data

The WLAs for NH3 are:

Acute WLA	=	11.93
Chronic WLA	=	1.45
Human Health WLA	=	----

The limits are based on chronic toxicity and 1 samples/month.

Maximum daily limit	=	2.120733
Average monthly limit	=	2.120733

DATA
1.5

7/1/2010 2:35:09 PM

Facility = Presidential Lakes, Section 14
Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 19
WLAc = 11
Q.L. = 100
# samples/mo. = 90
# samples/wk. = 23

Summary of Statistics:

observations = 1
Expected Value = 200
Variance = 14400
C.V. = 0.6
97th percentile daily values = 486.683
97th percentile 4 day average = 332.758
97th percentile 30 day average= 241.210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 16.0883226245855
Average Weekly limit = 8.2932988083132
Average Monthly LImit = 7.39793639872119
Units of measurement are expressed as ug/L.

The data are:

200

Attachment 11

STREAM INSPECTION REPORT FORM

Discharge Name: Presidential Lakes Section 14 STP

Location: Off of State Route 608, King George County

General Stream Information:

Stream Name: Popcastle Creek

Topographic Map (attach copy): Passpatanzy Quad #182D and KingGeorge Quad #181C

Basin: Rappahannock River Class: III Special Standards: q

Are the standards for this stream violated due to natural causes? (Y/N) No

Is this stream correctly classified? (Y/N) Yes

If "N", what is the correct classification? N/A

Additional Discharges Information:

Is there a discharger within 3 miles upstream of the proposal? (Y/N) No

Does antidegradation apply to this analysis? (Y/N) No

Any dams in stream section being modeled? (Y/N) No

Notes:

Inspected by Jim Olson Date 10/17/96 Region NVRO

STREAM INSPECTION REPORT FORM

(Fill In This Page for Each Segment to be Modeled)

Specific Stream Information From Field Inspection: Segment Number 1

Reason form Defining Segment: Tributary at End ____ Physical Change at End ____
Discharge at End ____ End of Model 1

Length of Segment (mi.) 2.7

Estimated Average Width of Section (ft.) 3

Estimated Average Depth of Section (ft.) in Stream Center 0.125

Estimated Average Velocity of Section (ft/sec) 0.4

Estimated Flow in the Segment (MGD) 0.096945

General Type of Cross Section in Segment: Rectangular ____ Triangular ____ Deep Narrow U ____ Wide Shallow Arc X
Irregular ____ No Defined Channel ____

General Channel Characteristics of Segment:
Mostly Straight ____ Moderately Meandering X Severely Meandering ____ No Defined Channel ____

Does the stream have a pool and riffle character? (Y/N) No
If "Y" % of length that is pools ____ Average depth of pools (ft) ____
% of length that is riffles ____ Average depth of riffles (ft) ____

Bottom: Sand ____ Slit X Gravel ____ Small Rock ____ Large Rock ____ Boulders ____

Sludge Deposits: None X Trace ____ Light ____ Heavy ____

Plants: Rooted: None X Trace ____ Light ____ Heavy ____

Algae: None X Film on Edges Only ____ Film on Entire Bottom ____

Does the water have an evident green color? (Y/N) No

Tributary: (Fill in if a tributary enters at the end of the segment)

Tributary Name: _____

Width (ft) ____ Depth (ft) ____ Estimated Flow (MGD) ____

Any evident Water Quality problems in the Trib.? (Y/N) ____

If "Y", explain: _____

_____

_____

Discharges: (Fill in if a discharge enters at the end of the segment)

Discharge Name: _____

Any evident problems caused by this discharge? (Y/N) ____

If "Y", explain: _____

_____

_____

DATA PREPARATION WORKSHEET

(This Page is needed for Each Separate Segment being Modeled)

The first segment starts at the discharge being modeled and segment ends are defined according to the field inspection. Normally a distance of 3 to 5 miles is sufficient for a single discharge model. Dilution by a major tributary is often sufficient to allow the model to be ended. You should, however, inspect sufficient stream length to allow you to increase the number of segments or total model length if the model shows that the critical area is outside your initial estimates. This will allow the addition of segments and the preparation of a new data set without the necessity to reinspect the stream. As a general guideline, the higher the percentage the discharge is of the total stream. As a general guideline, the higher the percentage the discharge is of the total stream flow the longer the distance you will have to model. Ten miles should suffice for practically all situations.

Segment Definition Code: 4

Reasons for Defining a Segment:
- 1 = A Tributary Enters at the Segment End
- 2 = A Significant Physical Change Occurs at Segment End
- 3 = Another Discharge Enters at Segment End
- 4 = The Model Ends

Length of Segment (Mi.): 2.7

Based on the stream characteristics you observed, use your judgement and the flow ratio below to estimate the segment's physical characteristics at the 7Q10 flow condition. Note that the model checks to see if cross sectional area times velocity is equal to the flow (V=QA). It checks to see if the drainage are increases in the downstream direction. You will run into trouble if the estimates you make are unreasonable.

(a): Enter Flow Estimated During Inspection (MGD): 0.096945

(b): Enter 7Q10 at Model Start <Include Discharge> (MGD): 0.035

(c): Calculate the Flow Ratio (a/b): 2.77

Estimated 7Q10 Width (Ft.): 1

Estimated 7Q10 Depth (Ft.): 0.22

Estimated 7Q10 Velocity (Ft./sec.): 0.25

Continuity Check:

(a): Multiply: Width x Depth x Velocity x .6463: 0.0355465

(b): Enter 7Q10 at Model Start <Include Discharge> (MGD): 0.035

If the two numbers above differ by such, you have made some sort of error. Review your data and revise you estimates.

Drainage Area at the Beginning of This Segment (Sq.Mi.): 0.3

Drainage Area at the End of This Segment (Sq.Mi.): 5.05

(Omit the drainage area of any tributaries that are included in this segment under the "Tributary at End" section below).

Elevation at the Beginning of This Segment (Ft.): 80

Elevation at the End of This Segment (Ft.): 10

The following data is based on the field inspection and you should estimate what the overall "average" segment will look like at the 7Q flow condition. You enter the number code that best describes what you saw for this segment.

Type of Cross Section

1 = Rectangular; 2 = Triangular; 3 = Deep Narrow U; 4 = Wide Shallow Arc; 5 = Irregular; 6 = No Defined Channel: 4

DATA PREPARATION WORKSHEET

(This Page is Needed Once for each Model)

Use this form to assist in the preparation of the model input data. The form is arranged so that the data appears in the order needed by the model. Once the form is complete, you may input the data for a model run by simply entering the numbers and other data that you have put in the right hand column. There is some guidance provided here, but for detailed guidance refer to the manual or call headquarters for assistance.

Some of the input data are character, such as names; some are codes, such as "Y", "N" kor "3"; and some are actual numeric data such as "5.6". Be careful to enter the correct item called for. Some of the lines below may be blank depending on choices. Leave them blank and do not input data for blank lines when running the model. Miscellaneous items that are not in the right most column are intermediate guidelines, not input data.

Site Inspection Performed? (Y/N)	Yes
Name of Receiving Stream	Popcastle Creek
River Basin	Rappahannock River
Section	4
Classification	III
Are Standards Violated Due to Natural Causes? (Y/N)	No
Class and Standards Appropriate for the Stream? (Y/N)	Yes
Is there a Dam in the Reach to be Modeled? (Y/N)	No
Is There a Discharge Within 3 Miles of Model Start? (Y/N)	No
If "Y": Flow of Upstream Discharge (MGD)	
BOD5 at Model Start (Mg/1)	
TKN at Model Start (Mg/1)	
D.O. at Model Start (Mg/1)	
Name of Discharge Being Modeled	Pres. Lakes Section 14 STP
Proposed Flow (MGD)	0.035
Proposed BOD (Mg/1)	14. 0 mg/l
Proposed TKN (Mg/1)	4. 2 mg/l
Proposed D.O. Start (Mg/1)	6. 0 mg/l
Number of Segments to be Modeled (Determined during your field inspection and based on the physical characteristics of the stream of the stream. See "Reason for Defining Segment" on Page 2)	1
7Q Estimation Method Code (Two methods are provided: 1 = Drainage Area Comparison; 2 = Flow Comparison You may compare drainage areas or observed flows at the model site with a gauge).	1
Name of Gauge Used to Estimate 7Q10	White Oak Run
If Method 1: Gauge Drainage Area (Sq.Mi.)	8.28
Gauge 7Q10 (MGD)	0.00
Drainage Area at Discharge (Sq.Mi.)	0.3
If Method 2: Gauge 7Q10 (MGD)	
Observed Flow at Gauge (MGD)	
Observed Flow at Discharge (Sq.Mi.)	
Is the Stream a Dry Ditch? (Y/N)	Yes
Does Antidegradation Apply? (Y/N)	No
Allocation Temperature for the Model (°C) (Obtain a STORET retrieval for the nearest monitoring station to the discharge. Enter the 98th percentile temperature of the STORET data for the period being modeled.)	25

DATA PREPARATION WORKSHEET

General Character of Stream: 2

1 = Mostly Straight; 2 = Moderately Meandering; 3 = Severely Meandering
4 = No Defined Channel

Does This Segment Have a Pool and Riffle Character? (Y/N): No

If "Y": Percent of the Length of This Segment That is Pools ÷ 100 _____
Percent of the Length of This Segment That is Riffles ÷ 100 _____
Estimated Average Depth of the Pools (Ft.) _____
Estimated Average Depth of the Riffles (Ft.) _____

Check that this is reasonable with the overall depth you entered on previous page:

(a): Enter the 7Q10 Depth (Ft.) <from Previous page> _____
(b): Enter % Pool Length x Pool Depth _____
(c): Enter % Riffle Length x Riffle Depth _____
(d): Enter (b+c)/100 _____

General Bottom Type: 2

1 = Sand; 2 = Silt; 3 = Gravel; 4 = Small Rock; 5 = Large Rock; 6 = Boulders

Sludge Deposits: 1

1 = None; 2 = Trace; 3 = Light; 4 = Heavy
(This is organic sludge from an inadequate or malfunctioning STP. Do not confuse with silt deposits from other sources.)

Plants: 1

1 = None; 2 = Trace; 3 = Light; 4 = Heavy
(These are submerged macrpohytes or rooted plants on the waterway.

Algae: 1

1 = None; 2 = Trace; 3 = Light; 4 = Heavy
(This is visually evident algae growth in the water, e.g. - green films, green filaments or green masses of algae attached to the bottom or in shallow parts of the bank.)

Does the Water Have an Evident Green Color? (Y/N): No

(This is used as an indication of phytoplankton that one cannot normally see except by a general color imparted to the water by the floating cells.)

Tributary at End

If defined the segment because there is a tributary at the end, complete the following:

Tributary Drainage Area (Sq.Mi.) _____
Tributary Flow (MGD) (Tributary D.A. x Gauge 7Q10 / Gauge D.A. _____

NOTE! "Standard" background values will be used for this tributary (i.e. - BOD5 = 2 Mg/l, TKN = 0 Mg/l, D.O. = 90% of D.O. Saturation). If these values are not appropriate or the tributary has a discharge within 3 miles of the confluence with the stream being modeled, then redefine the segment as "3 - Discharge at End" and go the next section.

Discharge at End

If you defined the segment because there is another discharge at the end, complete the following:

Discharge Name _____
Discharge Flow (MGD) _____
Discharge BOD5 (Mg/l) _____
Discharge TKN (Mg/l) _____
Discharge D.O. (Mg/l) _____

****

REGIONAL MODELING SYSTEM VERSION 3.2

DATA FILE SUMMARY

****

THE NAME OF THE DATA FILE IS: PRESLAKE.MOD

THE STREAM NAME IS: Popcastle Creek
THE RIVER BASIN IS: Rappahannock River
THE SECTION NUMBER IS: 4
THE CLASSIFICATION IS: III

STANDARDS VIOLATED (Y/N) = N
STANDARDS APPROPRIATE (Y/N) = Y

DISCHARGE WITHIN 3 MILES (Y/N) = N

THE DISCHARGE BEING MODELED IS: Presidential Lakes Section 14 STP

PROPOSED LIMITS ARE:
FLOW = .035 MGD
BOD5 = 14 MG/L
TKN = 4.2 MG/L
D.O. = 6 MG/L

THE NUMBER OF SEGMENTS TO BE MODELED = 1

7Q10 WILL BE CALCULATED BY: DRAINAGE AREA COMPARISON
THE GAUGE NAME IS: White Oak Run
GAUGE DRAINAGE AREA = 8.28 SQ.MI.
GAUGE 7Q10 = 0 MGD
DRAINAGE AREA AT DISCHARGE = .3 SQ.MI.

STREAM A DRY DITCH AT DISCHARGE (Y/N) = Y
ANTIDEGRADATION APPLIES (Y/N) = N

ALLOCATION DESIGN TEMPERATURE = 25 ½C

SEGMENT INFORMATION

SEGMENT # 1

SEGMENT ENDS BECAUSE: THE MODEL ENDS

SEGMENT LENGTH = 2.7 MI

SEGMENT WIDTH = 1 FT
SEGMENT DEPTH = .22 FT
SEGMENT VELOCITY = .25 FT/SEC

DRAINAGE AREA AT SEGMENT START = .3 SQ.MI.
DRAINAGE AREA AT SEGMENT END = 5.05 SQ.MI.

ELEVATION AT UPSTREAM END = 80 FT
ELEVATION AT DOWNSTREAM END = 10 FT

THE CROSS SECTION IS: WIDE SHALLOW ARC
THE CHANNEL IS: MODERATELY MEANDERING

POOLS AND RIFFLES (Y/N) = N

THE BOTTOM TYPE = SILT
SLUDGE DEPOSITS = NONE
AQUATIC PLANTS = NONE
ALGAE OBSERVED = NONE
WATER COLORED GREEN (Y/N) = N

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
03-11-1997 08:51:06

********** ********** **********

REGIONAL MODELING SYSTEM VERSION 3.2

****

MODEL SIMULATION FOR THE Presidential Lakes Section 14 STP DISCHARGE

TO Popcastle Creek

COMMENT: Highest cBOD allowed W/O violating D.O. Standard

THE SIMULATION STARTS AT THE Presidential Lakes Section 14 STP DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .035 MGD cBOD5 = 14 Mg/L TKN = 4.2 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS 1 SEGMENT LONG
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.490 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. ½C	DO-SAT Mg/L
1	2.70	0.336	15.556	1.400	0.400	0.000	45.00	25.00	8.322

(The K Rates shown are at 20½C ... the model corrects them for temperature.)

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 0.0350 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	6.000	35.000	5.196
0.100	0.100	5.642	33.896	5.141
0.200	0.200	5.412	32.827	5.086
0.300	0.300	5.274	31.791	5.032
0.400	0.400	5.202	30.788	4.978
0.500	0.500	5.177	29.817	4.925
0.600	0.600	5.186	28.877	4.873
0.700	0.700	5.218	27.966	4.821
0.800	0.800	5.266	27.084	4.770
0.900	0.900	5.326	26.229	4.719
1.000	1.000	5.393	25.402	4.669
1.100	1.100	5.464	24.601	4.619
1.200	1.200	5.538	23.825	4.570
1.300	1.300	5.613	23.073	4.522
1.400	1.400	5.689	22.346	4.473
1.500	1.500	5.764	21.641	4.426
1.600	1.600	5.837	20.958	4.379
1.700	1.700	5.910	20.297	4.332
1.800	1.800	5.981	19.657	4.286
1.900	1.900	6.050	19.037	4.240
2.000	2.000	6.118	18.436	4.195
2.100	2.100	6.184	17.855	4.151
2.200	2.200	6.248	17.292	4.107
2.300	2.300	6.310	16.746	4.063
2.400	2.400	6.370	16.218	4.020
2.500	2.500	6.428	15.706	3.977
2.600	2.600	6.485	15.211	3.935
2.700	2.700	6.540	14.731	3.893

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
03-11-1997 08:50:56

DATA FILE = PRESLAKE.MOD

********** ********** **********

REGIONAL MODELING SYSTEM VERSION 3.2

****

MODEL SIMULATION FOR THE Presidential Lakes Section 14 STP DISCHARGE

TO Popcastle Creek

COMMENT: D.O. Standard violated with this cBOD limit

THE SIMULATION STARTS AT THE Presidential Lakes Section 14 STP DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .035 MGD cBOD5 = 15 Mg/L TKN = 4.2 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS 1 SEGMENT LONG
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.490 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

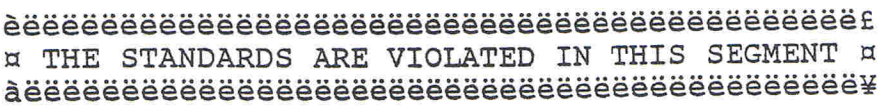
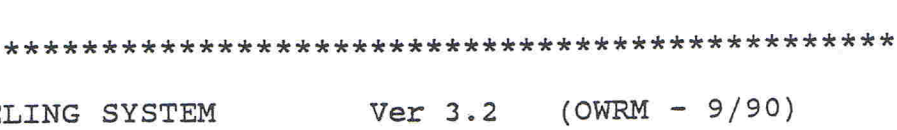
SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. ½C	DO-SAT Mg/L
1	2.70	0.336	15.556	1.400	0.400	0.000	45.00	25.00	8.322

(The K Rates shown are at 20½C ... the model corrects them for temperature.)

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 0.0350 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	6.000	37.500	5.196
0.100	0.100	5.574	36.317	5.141
0.200	0.200	5.297	35.172	5.086
0.300	0.300	5.127	34.062	5.032
0.400	0.400	5.034	32.988	4.978
0.500	0.500	4.996	31.947	4.925
0.600	0.600	4.996	30.940	4.873
0.700	0.700	5.025	29.964	4.821
0.800	0.800	5.072	29.018	4.770
0.900	0.900	5.132	28.103	4.719
1.000	1.000	5.201	27.217	4.669
1.100	1.100	5.276	26.358	4.619
1.200	1.200	5.354	25.527	4.570
1.300	1.300	5.433	24.722	4.522
1.400	1.400	5.513	23.942	4.473
1.500	1.500	5.593	23.187	4.426
1.600	1.600	5.672	22.455	4.379
1.700	1.700	5.749	21.747	4.332
1.800	1.800	5.825	21.061	4.286
1.900	1.900	5.899	20.396	4.240
2.000	2.000	5.971	19.753	4.195
2.100	2.100	6.041	19.130	4.151
2.200	2.200	6.110	18.527	4.107
2.300	2.300	6.176	17.942	4.063
2.400	2.400	6.240	17.376	4.020
2.500	2.500	6.303	16.828	3.977
2.600	2.600	6.364	16.297	3.935
2.700	2.700	6.422	15.783	3.893

è  £
¤ THE STANDARDS ARE VIOLATED IN THIS SEGMENT ¤
à  ¥

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REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
03-11-1997 08:52:47

DATA FILE = PRESLAK2.MOD

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REGIONAL MODELING SYSTEM VERSION 3.2

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MODEL SIMULATION FOR THE Presidential LAkes Section 14 STP DISCHARGE

TO Popcastle Creek

COMMENT: HIGHEST CBOD ALLOWED W/O VIOLATING D.O. STANDARD

THE SIMULATION STARTS AT THE Presidential LAkes Section 14 STP DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .07 MGD cBOD5 = 14 Mg/L TKN = 4.2 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS 1 SEGMENT LONG
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.490 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. ½C	DO-SAT Mg/L
1	2.70	0.336	15.556	1.400	0.400	0.000	45.00	25.00	8.322

(The K Rates shown are at 20½C ... the model corrects them for temperature.)

* THE TKN limit of 4.2 mg/L is BASED on THE Assumption That TKN is Equal to 2 X THE Ammonia limit. Therefore An Ammonia limit of 2.1 mg/L is Equal to A TKN Value of 4.2 mg/L

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 0.0700 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	6.000	35.000	5.196
0.100	0.100	5.642	33.896	5.141
0.200	0.200	5.412	32.827	5.086
0.300	0.300	5.274	31.791	5.032
0.400	0.400	5.202	30.788	4.978
0.500	0.500	5.177	29.817	4.925
0.600	0.600	5.186	28.877	4.873
0.700	0.700	5.218	27.966	4.821
0.800	0.800	5.266	27.084	4.770
0.900	0.900	5.326	26.229	4.719
1.000	1.000	5.393	25.402	4.669
1.100	1.100	5.464	24.601	4.619
1.200	1.200	5.538	23.825	4.570
1.300	1.300	5.613	23.073	4.522
1.400	1.400	5.689	22.346	4.473
1.500	1.500	5.764	21.641	4.426
1.600	1.600	5.837	20.958	4.379
1.700	1.700	5.910	20.297	4.332
1.800	1.800	5.981	19.657	4.286
1.900	1.900	6.050	19.037	4.240
2.000	2.000	6.118	18.436	4.195
2.100	2.100	6.184	17.855	4.151
2.200	2.200	6.248	17.292	4.107
2.300	2.300	6.310	16.746	4.063
2.400	2.400	6.370	16.218	4.020
2.500	2.500	6.428	15.706	3.977
2.600	2.600	6.485	15.211	3.935
2.700	2.700	6.540	14.731	3.893

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REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
03-10-1997 15:56:56

DATA FILE = PRES1-A.MOD

REGIONAL MODELING SYSTEM VERSION 3.2

MODEL SIMULATION FOR THE Presidential LAkes Section 14 STP DISCHARGE

TO Popcastle Creek

COMMENT: D.O. STANDARD VIOLATED WITH THIS CBOD LIMIT

THE SIMULATION STARTS AT THE Presidential LAkes Section 14 STP DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .07 MGD cBOD5 = 15 Mg/L TKN = 4.2 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS 1 SEGMENT LONG
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.490 Mg/L
THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. ½C	DO-SAT Mg/L
1	2.70	0.336	15.556	1.400	0.400	0.000	45.00	25.00	8.322

(The K Rates shown are at 20½C ... the model corrects them for temperature.)

********************** RESPONSE FOR SEGMENT 1 **********************

TOTAL STREAMFLOW = 0.0700 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	6.000	37.500	5.196
0.100	0.100	5.574	36.317	5.141
0.200	0.200	5.297	35.172	5.086
0.300	0.300	5.127	34.062	5.032
0.400	0.400	5.034	32.988	4.978
0.500	0.500	4.996	31.947	4.925
0.600	0.600	4.996	30.940	4.873
0.700	0.700	5.025	29.964	4.821
0.800	0.800	5.072	29.018	4.770
0.900	0.900	5.132	28.103	4.719
1.000	1.000	5.201	27.217	4.669
1.100	1.100	5.276	26.358	4.619
1.200	1.200	5.354	25.527	4.570
1.300	1.300	5.433	24.722	4.522
1.400	1.400	5.513	23.942	4.473
1.500	1.500	5.593	23.187	4.426
1.600	1.600	5.672	22.455	4.379
1.700	1.700	5.749	21.747	4.332
1.800	1.800	5.825	21.061	4.286
1.900	1.900	5.899	20.396	4.240
2.000	2.000	5.971	19.753	4.195
2.100	2.100	6.041	19.130	4.151
2.200	2.200	6.110	18.527	4.107
2.300	2.300	6.176	17.942	4.063
2.400	2.400	6.240	17.376	4.020
2.500	2.500	6.303	16.828	3.977
2.600	2.600	6.364	16.297	3.935
2.700	2.700	6.422	15.783	3.893

èëë£
¤ THE STANDARDS ARE VIOLATED IN THIS SEGMENT ¤
àëë¥

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REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
03-10-1997 15:58:12

DATA FILE = PRES1-A.MOD

Revised 2/2003

State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Presidential Lakes, Section 14
NPDES Permit Number:	VA0086720
Permit Writer Name:	Joan C. Crowther
Date:	July 9, 2010

Major [ ] **Minor** [x] **Industrial** [ ] **Municipal** [x]

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?	X		
8. Whole Effluent Toxicity Test summary and analysis?			X
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?	X		
6. Does the permit allow the discharge of new or increased loadings of any pollutants?	X		
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water? Not directly into a 303(d) listed water; FS describes downstream TMDLs and how they effect this permit reissuance.		X	
a. Has a TMDL been developed and approved by EPA for the impaired water?			X
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	X		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	

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I.B. Permit/Facility Characteristics – cont.	**Yes**	**No**	**N/A**
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?			
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs
(To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

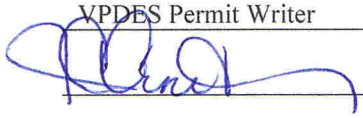
II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for ALL of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?	X		
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?	X		
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Joan C. Crowther
Title	VPDES Permit Writer
Signature	
Date	July 9, 2010